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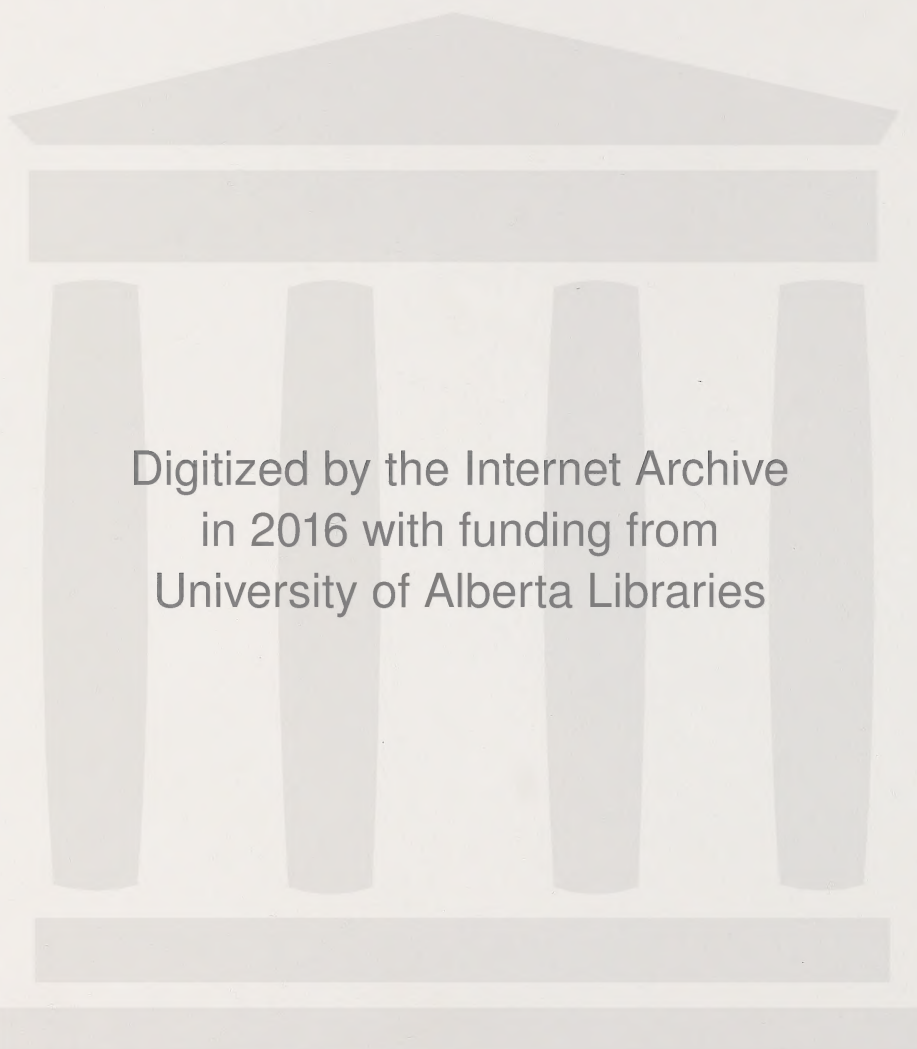


CAREER & TECHNOLOGY STUDIES

**2-D Design Applications
DES 2010**

Learning
Technologies
Branch

Alberta
LEARNING



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2-D Design Applications

DES 2010

Design Studies 2010
2-D Design Applications
Student Module Booklet
Learning Technologies Branch
ISBN 0-7741-1530-0

This document is intended for	
Students	✓
Teachers	✓
Administrators	
Parents	
General Public	
Other	



You may find the following Internet sites useful:

- Alberta Learning, <http://www.learning.gov.ab.ca>
- Learning Technologies Branch, <http://www.learning.gov.ab.ca/lrb>
- Learning Resources Distributing Centre, <http://www.learning.gov.ab.ca/lrdc>

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Welcome!

Welcome to DES 2010.

We hope you'll enjoy your study of
2-D Design Applications.

CTS strands were designed to stand alone or be integrated with other strands for a customized course of studies to meet student needs. Through each strand, CTS basic competencies (knowledge, skills, and attitudes) will be identified as follows:



Careers

Careers: identify appropriate career linkages within the strand being studied



Communication

Communication: effectively present concise written, visual, and oral communications



Ethics

Ethics: make judgements about whether behaviour is right or wrong on personal, community, and global levels



Innovation

Innovation: recognize opportunities/problems and identify and suggest new ideas

Safety: assess potential risks, and follow personal and environmental safety procedures



Safety

Task Management: demonstrate an ability to locate and use resources and to use time effectively



Task Management

Teamwork: work towards goals co-operatively, collaboratively, or independently, and acknowledge the opinions of others



Teamwork

Technology: effectively use technology when required



Technology

These basic competencies build daily living skills useful in a broad range of future endeavours and careers.

The eight icons that appear here indicate to students and facilitators that a basic competency has been identified in the activity offered to the students. Not all of the icons appear in each course.

Visual Cues

In addition to the Career and Technology basic competencies icons described earlier, you may find visual cues throughout the Student Module Booklet to assist you in your studies. Read the following explanations to discover what each icon prompts you to do.



View a videocassette.



This icon indicates important information.



You may wish to add this to your design portfolio.

Remember that at the end of this course you must submit a design portfolio as part of your assignment.



Access the Internet (always an optional task).

Remember that any Internet website address given in this course is subject to change.

Design Studies

O ♦ V ♦ E ♦ R ♦ V ♦ I ♦ E ♦ W

Introductory

Intermediate

Advanced

Theme

DES 1010
Sketch, Draw, and Model

DES 1020
The Design Process

DES 1030
2-D Design Fundamentals

DES 1040
3-D Design Fundamentals

DES 2010
2-D Design Applications

DES 2020
3-D Design Applications

DES 3010
2-D Design Studio I

DES 3020
2-D Design Studio 2

DES 3030
2-D Design Studio 3

DES 3040
3-D Design Studio I

DES 3050
3-D Design Studio 2

DES 3060
3-D Design Studio 3

DES 3070
Living Environment Studio I

DES 3080
Living Environment Studio 2

DES 3090
Living Environment Studio 3

Design Skills,
Processes,
and Applications

DES 1050
CAD Fundamentals:
Computer-Aided Design

DES 1060
Drafting and Design
Fundamentals

DES 2030
CAD Applications:
Computer-Aided Design

DES 2040
Drafting and Design
Applications

DES 2050
Technical Drawing
Applications

DES 3100
CAD Modelling Studio:
Computer-Aided Design

DES 3110
Drafting and Design Studio I

DES 3120
Drafting and Design Studio 2

DES 3130
Drafting and Design Studio 3

DES 3140
Technical Drawing Studio I

DES 3150
Technical Drawing Studio 2

DES 3160
Technical Drawing Studio 3

Drafting
for
Design
and
Technical Drawing
Skills

DES 2060
The Evolution of Design

DES 3170
Visualizing the Future

DES 3180
The Design Profession

DES 3190
Portfolio Presentation

Business,
Issues, and
History

Prerequisite ——— Recommended Sequence

Some of these courses may not yet be in a distance learning format.

CAREER & TECHNOLOGY STUDIES

Resources

- a notebook or binder in which to respond to the questions asked in this Student Module Booklet
- a VCR and the following optional videocassettes
 - *A Design Project—Case Study: Four Responses to a Design Brief*
 - *Visual Design: Elements and Principles*
 - *Basic Drawing: Line, Light, Shade, and Texture*
 - *Technical Graphics*
- supplies
 - ruler
 - pencils (hard, soft)
 - coloured construction paper
 - copy/drawing paper
 - scissors
 - card or mount board
 - technical pens
 - fine-line markers
 - studio markers
 - paints (acrylic, watercolours, or tempera)
 - paint brushes
 - glue (contact cement or spray adhesive)
 - styrofoam tray or discarded jar lid
 - utility knife or mount cutter
 - tape (masking; brown, butcher's)
 - coloured pencils (pencil crayons)
 - felt pens
 - graph (grid) paper
- supplies for a design portfolio (If you have taken previous Design Studies courses, you will be adding designs and projects to your existing portfolio.)
 - three-ring binder or custom-designed folder
 - clear, plastic sleeves
 - loose-leaf paper
- your local library

Note that you may be required as part of this course to do outside research and to meet with people in the design industry.



C • O • N • T • E • N • T • S

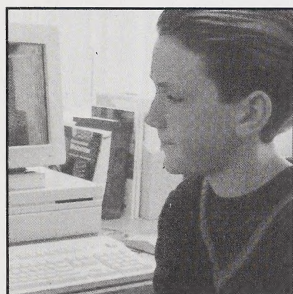
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Section 1: Your Design Journal and Portfolio



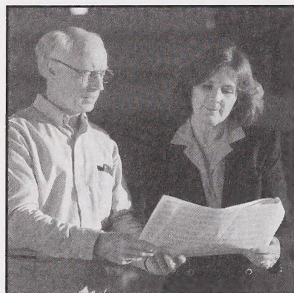
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PHOTODISC, INC.

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2-D Design Applications

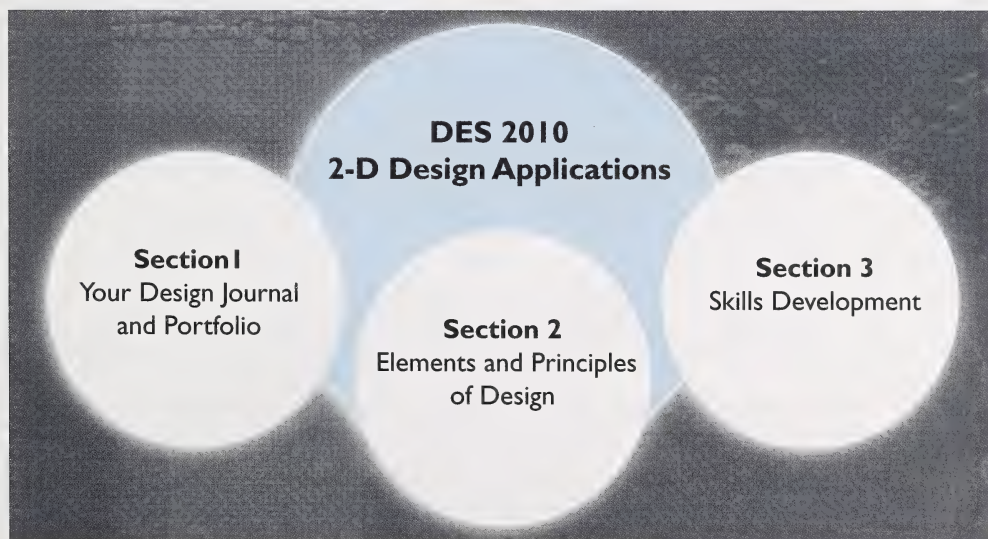


O • V • E • R • V • I • E • W

You have noticed that when you finish your classwork early you start making small sketches, doodles, and designs in the margins of your paper. Some of your teachers and classmates have commented on your interesting designs, and you have been approached about using some of your designs in the school yearbook. You have also been asked to create designs to be used as murals on classroom walls.

You know that you have many decisions to work through in order to make your designs suitable for printing in the yearbook. You also know that it will be even more difficult to turn your small sketches into murals. You will need to consider which media to use and which techniques will give your work a professional look. However, if you work through the steps of the design process, you will have an organized method for approaching these projects. If you use the elements and principles of design effectively, your designs will be aesthetically pleasing.

In this course, design skills, processes, and applications will be presented. You will examine the elements and principles of design that will help you add special effects to your designs. Techniques and media that can be used in your design creations will also be suggested. You will use the design process to solve two-dimensional design problems. You will create, maintain, and present a course portfolio.



Assessment

The document you are presently reading is called a Student Module Booklet. It will show you, step by step, what to do and how to do it.

This course, 2-D Design Applications, is worth one credit. The course is comprised of three sections. Within each section, your work is grouped into activities. Within the activities, there are readings, explanations, and questions for you to work through. You will correct these activities yourself using the Appendix at the end of this Student Module Booklet. These suggested answers will provide you with immediate feedback on your progress.

A portion of your grade in this course will be based on the assignments that you complete for assessment. You are expected to complete two Assignment Booklets for this course. The mark distribution is as follows:

Assignment Booklet A	
Section 1 Assignment	10 marks
Section 2 Assignment	10 marks
Section 3 Assignment	50 marks
Assignment Booklet B	
Final Course Assignment	<u>30 marks</u>
TOTAL	100 marks

The CTS courses are competency based, which means that you must successfully complete each section to receive credit for the course.

In addition, you might also be required to complete a final test. The weighting for this final test will be determined by your teacher.

Strategies for Completing This Course

Organize your materials and work area before you begin: Student Module Booklet, notebook, pens, pencils, and so on. Make sure you have a quiet area in which to work, away from distractions.

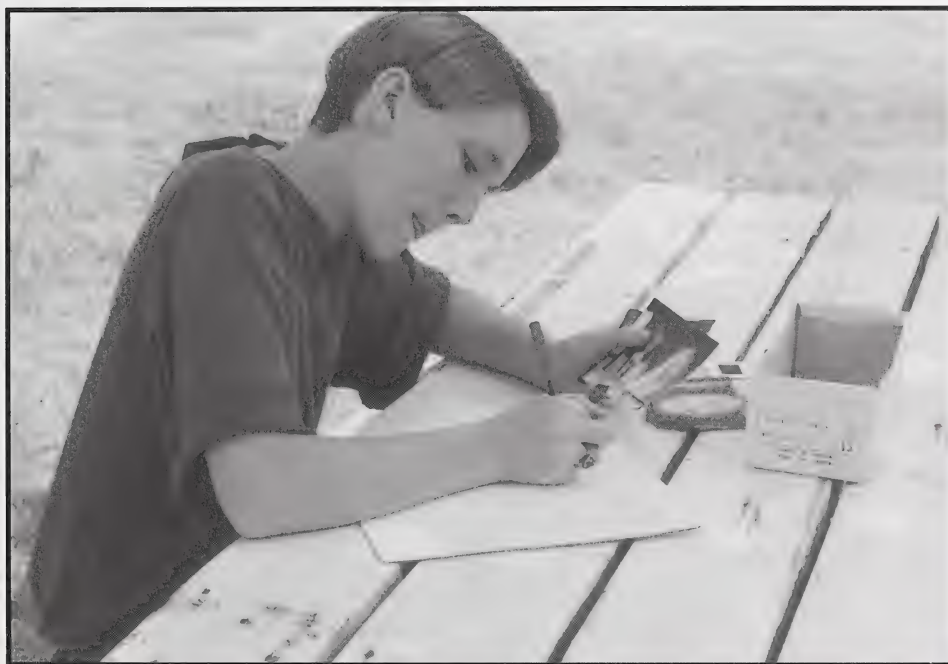
Because response lines are not provided in the Student Module Booklet, you'll need a notebook or lined paper to respond to questions and complete charts. It's important to keep your lined paper handy as you work through the material and to keep your responses together in a notebook or binder for review purposes later.

To achieve success in this course, be sure to read all of the instructions carefully and work slowly and systematically through the material. Remember, it's the work you do in this Student Module Booklet that will prepare you for your assignments. Try to set realistic goals for yourself each day; and when you've set them, stick to them. Do your assignments regularly, and don't forget to review your work before handing it in. Careful work habits will greatly increase your chances for success in Design Studies.

Good luck!



Your Design Journal and Portfolio



JAY Markova is working on his design journal. He has been keeping notes, photos, sketches, and cuttings from newspapers, magazines, and catalogues. He hopes to generate ideas for his own designs from this collection.

As Jay is determined to pursue a career in art and design, he has begun a portfolio of his best work. He knows a portfolio is one of the requirements for admission into art programs at colleges and universities. He also realizes a portfolio presented professionally may help him start his career.

In this section, you will review or become aware of what a design journal and design portfolio are. You will consider suggestions for creating, maintaining, and presenting a professional design portfolio. Preparing a portfolio is necessary if you wish to apply to post-secondary institutions or seek employment in the art and/or design industry.

SECTION 1

ACTIVITY I

Your Design Journal



If you have taken other courses in design studies, you already know what a design journal is and you have a portfolio. In this course, you can add to your design journal. You can review the contents of your portfolio and make any additions and improvements you feel are necessary. If you have not taken courses in design studies, you will be doing a design journal and creating a design portfolio.

As your final course assignment, you will submit your design portfolio to your teacher after you have completed Section 3. Throughout Section 2 and Section 3, continue including items in your journal and building your portfolio. Your design portfolio for this course should emphasize your understanding of the elements and principles of design and two-dimensional design applications.

What Is a Design Journal?

Perhaps you have already had some experience in journal writing. You will recall that a journal is a way of keeping track of the following:

- thoughts
- ideas
- experiences
- feelings
- impressions
- observations
- descriptions
- plans





design journal: a collection that may include such things as design drawings, sketches, ideas, notes, and pictures

thumbnail sketches: small sketches measuring approximately 2.5 cm by 2.5 cm



Just as you may have a personal diary or journal to keep a written record of your personal thoughts and the activities in your life, designers keep design journals. What is a **design journal**?

A design journal is a collection of working drawings, **thumbnail sketches**, and design ideas that you generate while working on activities or that come to mind spontaneously.

Keeping a design journal allows you to develop and collect thumbnail sketches of your own ideas and designs. A design journal also gives you an opportunity to explore and develop a collection of images, projects, pictures, postcards, diagrams, or sketches that may represent your design ideas. A separate section of the design journal should be devoted to a collection of other people's designs that you find fascinating.

A design journal will allow you to study the material you have collected and make decisions about what you consider to be good or poor designs. In your journal you should also include notes about aspects of the work you would change or ideas for improvements.



two-dimensional (2-D): having length and width, but no thickness, depth, or height

A design journal may be set up with sections or categories of work; for example, thumbnail sketches, design ideas, **two-dimensional (2-D)** design work, photographs of **three-dimensional (3-D)** design work, design projects, drafting applications, and multimedia applications.

three-dimensional (3-D): having length, width, and depth or height

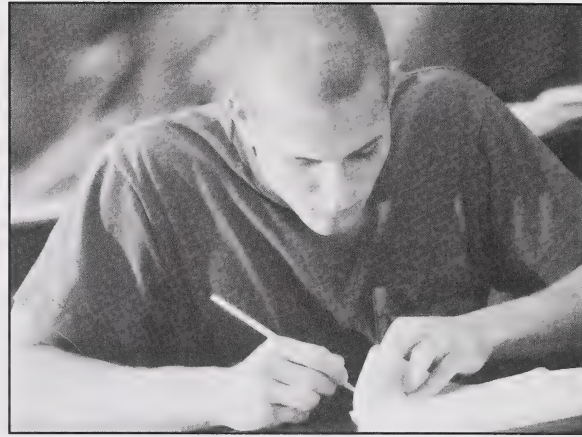


You can create categories to meet your specific needs, or you can set up your design journal sequentially, where you just keep adding items without having categories.

A sketchbook, a scrapbook, or a loose-leaf binder with unlined sheets of paper may be most suitable for keeping track of your thoughts, ideas, feelings, impressions, observations, descriptions, and plans. You may want to use a large folder or design a special paper box to contain your design-journal items.

Your design journal is intended to become a part of your high school design-studies program. You should continue to gather ideas that appeal to you, further develop your ideas, and create new ideas; this compilation will express a unique you.

You should continue to add to your journal throughout the year. It is a visual representation that expresses your interests and skills.



1. What are two other ways you may wish to store materials for your design journal?
2. What are two things you should consider when beginning or reviewing your design journal?

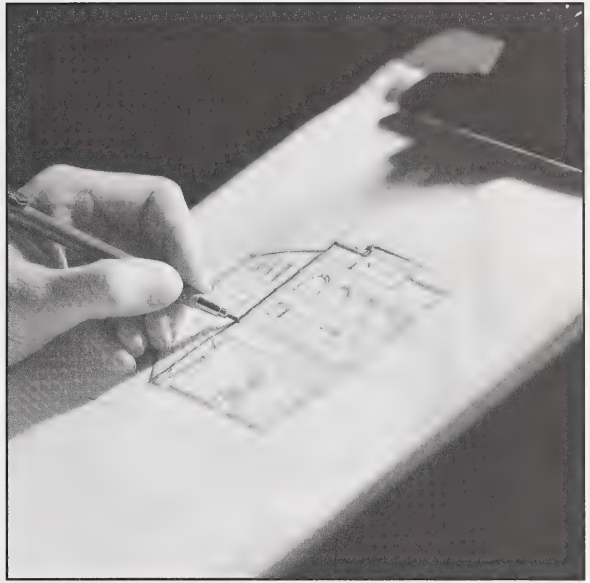
Compare your responses with those in the Appendix, Section 1: Activity 1.

Through the development of a design journal you will be able to do the following:

- Express yourself through a visual medium of sketching and drawing.
- Create a collection of ideas from magazines, newspapers, and the Internet.
- Identify your personal preferences and interests in graphic designs, sketching and drawing, designing and/or drafting, computer-graphics software applications, and multimedia applications.
- Become knowledgeable about your skills and interests as you periodically review your own work and analyse your skills, techniques, abilities, and interests.
- See the breadth and depth of design projects available to you.
- Develop your ideas and interests into possible career opportunities.
- See opportunities available as they relate to design.
- See progress and growth in your abilities in design applications.

Your design journal should express your interests and skills. It should provide insight and details that will help in your design studies. Your experience with your design journal should be unique, personally satisfying, and rewarding. Hopefully, keeping a journal will give you a sense of control of your personal growth in design studies.

Your personal design journal is the first stage in developing a design portfolio. Select your best work from the design journal to go into your design portfolio.



3. Start a design journal or continue to add to one you already have. What are three items that should be included in your design journal?
4. Use the following checklist to help you start or continue your design journal:
 - Express yourself through a visual medium of sketching and drawing.
 - Create a collection of ideas from magazines and newspapers.
 - Create a collection of visual images from the Internet.
 - Identify your personal preferences and interests in graphic designs, sketching and drawing, designing and/or drafting, computer-graphics software applications, and multimedia applications.
 - Become knowledgeable about your own skills and interests as you periodically review your own work and analyse your skills, techniques, abilities, and interests.
 - See progress and growth in your abilities in design applications.
 - Organize your collection and notes.
 - Date and sign original pieces of work.
 - Date and indicate sources of other pieces of work in your collection.

Compare your responses with those in the Appendix, Section I: Activity I.

Your design journal gives you the opportunity to collect drawings, postcards, images, sketches, magazine clippings, ideas, and pictures of design items that are interesting to you. You can also keep notes on any one of these items.



ACTIVITY 2

Creating a Design Portfolio

▼
portfolio: a collection of self-selected samples of work from your design journal that shows effort, progress, achievement, and accomplishments over time in a given area
▲

Have you ever created a portfolio? You may have if you have taken an English course. A **portfolio** is an ongoing and purposeful collection of samples of your work that you have selected, which shows your efforts, progress, achievement, and accomplishments in a given area.

Your portfolio should also have some of the following qualities:

- exhibits breadth and depth of capabilities
- exhibits organization and attention to detail
- includes integration of academic and applied academic accomplishments
- illustrates personal-management skills
- illustrates teamwork skills where appropriate
- develops a tracking system for learning
- illustrates the application of technology, creativity, and thought
- uses the appropriate medium for the message
- summarizes accomplishments
- portrays excellence

Purpose of a Design Portfolio

Portfolios have many purposes and can become a lifelong collection of work if desired. In order to get into any design school or art college, a portfolio of work is necessary. A portfolio can also assist you in obtaining employment. When you take your portfolio to a job interview, the interviewer can quickly see your skill development, creativity, and discipline. The portfolio can assist you in a job interview because it can clearly show and explain your skills, abilities, creativity, and experiences.



1. What are two purposes for having a design portfolio?

Compare your response with the one in the Appendix, Section 1: Activity 2.

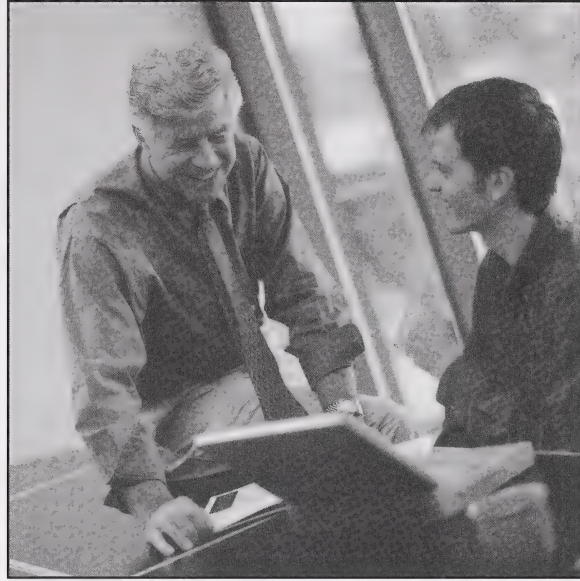
Consider the following when determining the purpose of your portfolio:

- Prepare a portfolio for a specific purpose, for example, for entry into the workplace or a post-secondary institution. Set your own guidelines for the selection of content. If the portfolio is to be judged, consider the criteria by which it will be judged.
- Find a **mentor** with whom you can discuss your portfolio.
- Introduce yourself in the portfolio. Highlight the following:
 - your innovative ideas
 - your creative abilities
 - your ability to work in a team
 - your leadership capabilities
 - your ability to manage your learning
 - other skills that you have developed
- Reorganize your portfolio for a specific type of job to demonstrate that you have the skills required for the job. It is a good idea to take your design portfolio with you to interviews.

▼
mentor: a
trusted advisor
knowledgeable in
a particular field
▲

As discussed in Activity 1, your design journal is the first step to having project work from which you can select pieces to put into your design portfolio. It is important to include your best work in your design portfolio.

The work in your design portfolio is evidence of the type and quality of work you are capable of doing. It should give the viewer of your portfolio an idea of who you are, what you are capable of creating now, and what you may design in the future.



The work you select for the design portfolio can be organized and reorganized depending upon how you intend to use the portfolio.

Suppose that you are seeking employment in design, graphics, computers, or a related area. Several weeks ago you completed an application for part-time work at Y Studio, and now you have been called for an interview. You want to take your portfolio to show to the people who are interviewing you. You will need to tailor the portfolio to meet what you think are the needs of Y Studio and to allow for your skills, creativity, and abilities to be recognized so you will be hired. How do you go about preparing yourself and the portfolio?

2. Suppose you are planning on seeking employment in an area of design graphics. State why you should have a portfolio to show your interviewers.

Compare your response with the one in the Appendix, Section 1: Activity 2.

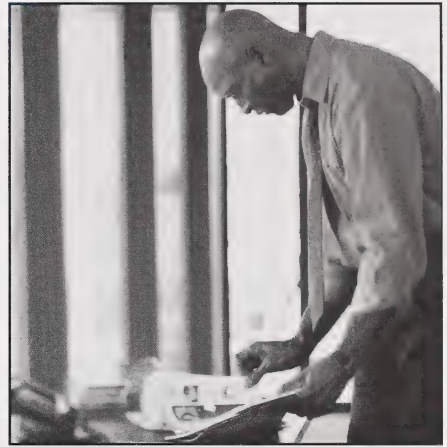
These next activities will guide you through the process of creating, organizing, and maintaining your design portfolio.

Organizing Your Design Portfolio

Portfolios can take on many forms. Some can fit into a binder; others can fit into custom-designed folders of any size.

If there are larger pieces of work or projects, photographs of the work can be taken and placed in the portfolio. Alternatively, these works could be stored and transported in other containers.

Videotapes can also be used to keep track of some of your work. As portfolios are needed for various purposes, you can custom-design them to other specifications.



To make storage and mailing easier, your portfolio for Design Studies should be able to fit into a three-ring, loose-leaf binder with plastic sleeves. (The work done in your sketchbook can be done on large sheets, but trimmed down to the size of your portfolio.)

Consider the following when organizing your portfolio:

- Include rough sketches, two-dimensional design work, photographs of three-dimensional design work, drafting applications, and multimedia applications from your design journal to illustrate your abilities.
 - Date and sign each item in your portfolio.
 - Write descriptions or titles on the drawings for self-explanation purposes. This may be done on separate sheets of paper inserted into plastic sleeves. In smaller-sized text, explain the projects, the tools and materials used, and what you learned from each experience.
 - Create content dividers (title pages) for your portfolio.
 - Include CDs, computer disks, and/or videotapes as part of multimedia projects whenever possible; these show your skills, ideas, and creativity.
 - Be creative and have fun with the design-portfolio project.
3. If you were developing a multimedia portfolio, what items would you include in your design portfolio?

Compare your response with the one in the Appendix, Section 1: Activity 2.

Maintaining Your Design Portfolio

When deciding how to maintain your portfolio, you should do the following:

- Provide a listing and short description of portfolio contents. If you don't take time to organize your work, your portfolio could end up being a scrapbook.
- Pay attention to detail.
 - Write captions for your work.
 - Provide an explanation of the work and list the tools and materials used.
 - Sign and date each item.
- Decide what accomplishments to document and how to do them.



4. Give three suggestions for continuing to organize and maintain your portfolio.
5. Start creating your design portfolio for this course. In doing so, be sure to consider the mechanics for creating, organizing, and maintaining a portfolio.

Remember, it is important to include your best work in your portfolio. You will be submitting your portfolio as part of your final course assignment.

Compare your responses with those in the Appendix, Section 1: Activity 2.

If you have access to the Internet, examine portfolios presented by a variety of graphic-design artists and companies. Use a search engine to explore the term *design graphics* and select the country or region that interests you.



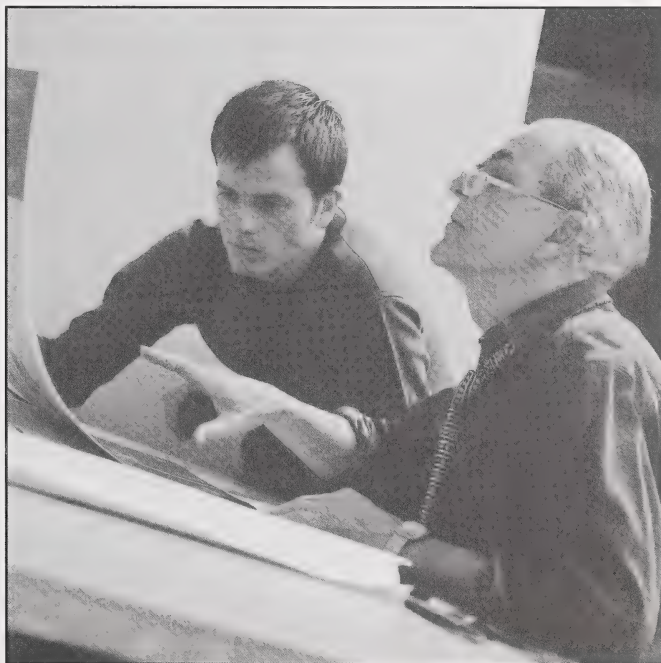
There is a wide variety of portfolio styles, content, and emphasis. Viewing the portfolio contents of others helps you identify your particular interests. You may find ideas for organizing and/or presenting your portfolio. You may wish to bookmark sites you find particularly interesting. If you create a home page for yourself, you may wish to create links to some of these sites. The list of sites should become part of your design portfolio.

In this activity, you looked at selecting items from your design journal to place into your design portfolio, which should contain all of your best work. You discovered that your portfolio should illustrate the skills and abilities you have developed in design studies. You also examined the organization and maintenance of your portfolio to make it effective. Since a portfolio is often needed for entry into design or art schools or for certain jobs, it is important to value your work and take special care of it.

ACTIVITY 3

Presenting Your Design Portfolio

Presenting a portfolio gives you the opportunity to communicate your skills and abilities in a formal manner. It is a time when you can draw attention to your strengths, interests, creativity, experiences, and hard work.



Presentation is an important aspect of Design Studies. When presenting your work, consider the saying, “A picture is worth a thousand words.” If you do not present your pieces of work well, then the work will not communicate your ideas or information effectively.

Preparing for a Presentation

It is important to prepare your portfolio (and yourself) for presentation.

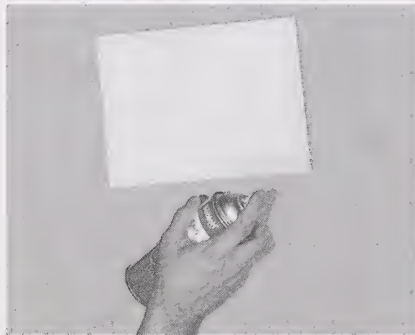
Drawings to be presented should be **mounted** (arranged to a backing for display). This will help draw the viewer’s attention to the work. Mounting also helps to protect the edges of the work during handling and transporting.

Drawings can be glued directly to cards or mounting or matting boards. You could also choose the window-mounting method. With this method you secure your drawings behind the mat with tape or glue.

Note: Masking tape or brown, butcher’s tape can be used. Masking tape allows you to reposition your work; however, it may loosen with age. Do **not** use cellophane tape or strapping tape for these reasons:

- These types of tapes may tear your artwork if repositioning is needed.
- These tapes may discolour your artwork.
- These tapes harden quickly (they disintegrate or break down) and may cause your work to come loose from the mounting material.

Simple Mounting on a Matting Board



Apply adhesive to the back of your work.

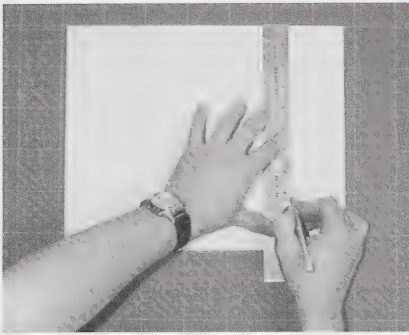


Position the drawing on a mounting or matting board.

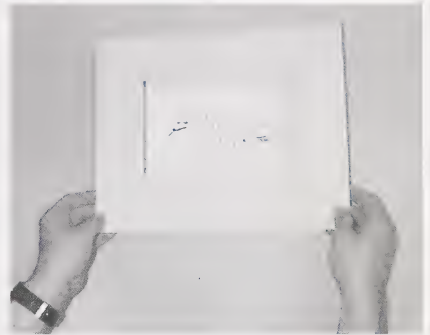


Take care when using spray adhesives. Follow the manufacturer’s directions on the can. Avoid breathing in the fumes.

Simple Mounting Behind a Matting Board (Window-Mounting)



Cut the mount or mat with a sharp utility knife or mount cutter.



Secure the drawing behind the mount with masking or brown butcher's tape.

Always position the work carefully on or behind the matting board. Leave a slightly larger border at the bottom of the frame. This accomplishes four things:

- It helps to draw the viewer's attention to the piece of work.
 - It gives a professional appearance to the work.
 - It gives the viewer a chance to absorb the displayed information before continuing.
 - It reduces eye fatigue, which can stop the flow of communication.
1. Which of the two diagrams shows the preferred placement of work on a matting board? Support your answer.

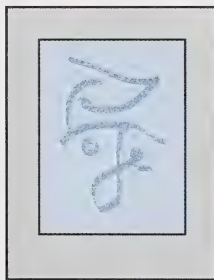


Diagram A



Diagram B

Compare your response with the one in the Appendix, Section 1: Activity 3.

If the size of the work is small, items can be grouped together on the same mount according to theme, colour, and so on. The items should be positioned carefully so that the grouping forms an interesting but balanced display. For this method of presentation, you must consider the layout carefully or the final product may look cluttered and unorganized.

2. Which of the two diagrams shows the better layout design for grouping items? Support your answer.

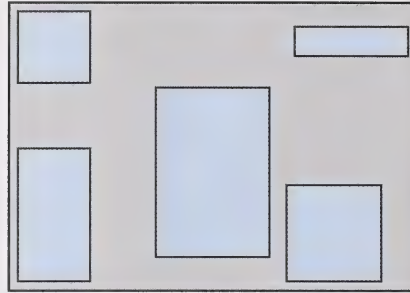


Diagram A

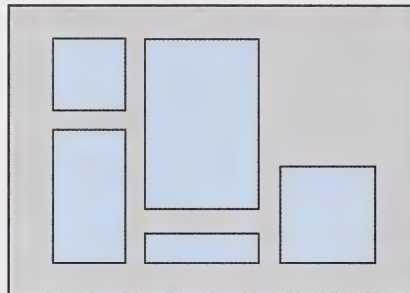
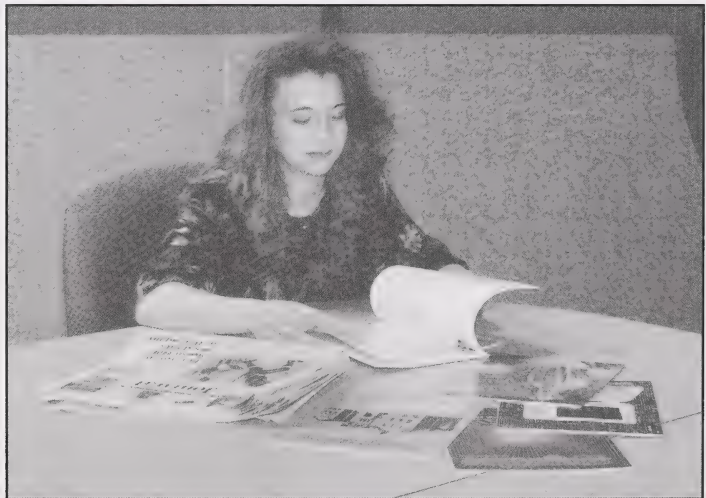


Diagram B

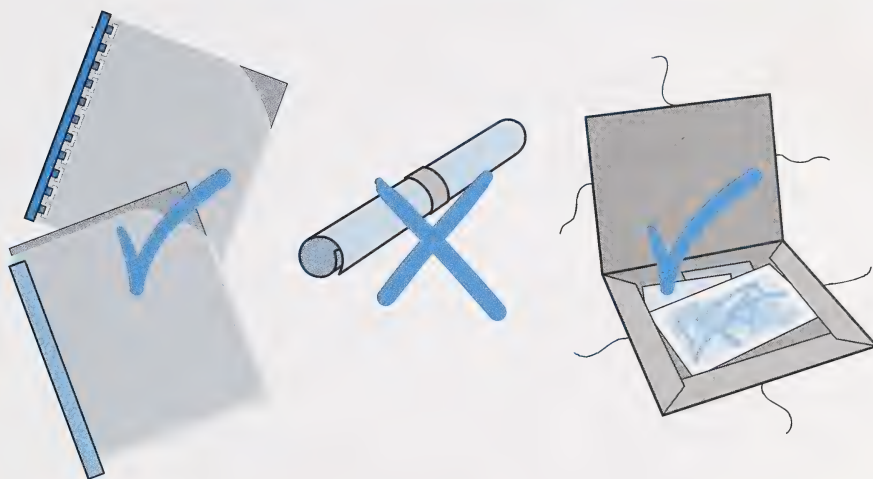
Compare your response with the one in the Appendix, Section 1: Activity 3.

Storing and transporting work can create problems. Ideally, all of your work should be kept flat. Rolling up artwork is not a satisfactory method for storing or presenting your work. You cannot present a piece well if you are trying to keep the item from curling up.



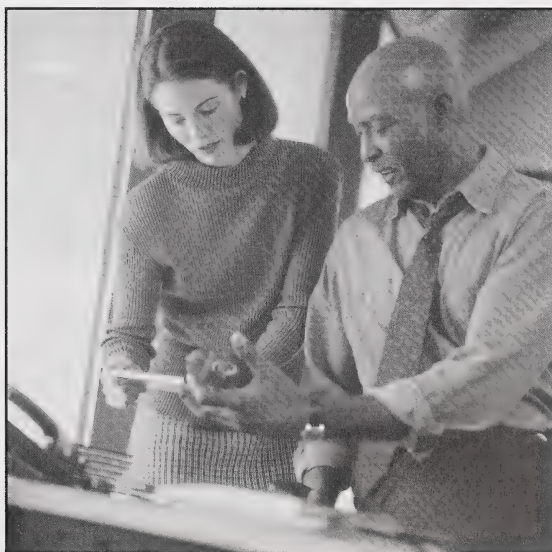
It may be necessary to purchase an artwork folder from an art shop. It is possible to make your own folder, but the results may not appear as professional. If you plan to present your work for an employment opportunity or for entry into a post-secondary institution, you should store and transport your materials carefully.

Storing and Transporting Work



Presenting Your Portfolio to a Mentor

To give yourself an opportunity to celebrate your work, skills, creativity, and abilities, you may wish to present your work to a mentor. A mentor can guide you, listen to you, and give you advice. Your mentor can help you determine areas where improvements need to be made. Presenting your work this way also gives you a chance to communicate your skills and abilities in a formal way.





job shadowing:
*a way of learning
about an
occupation by
spending time
with someone
working in the
field*



An excellent way to find a mentor is to do **job shadowing**. The advantages of job shadowing are as follows:

- Spending time watching someone do his or her job by job shadowing is one good way to check out an occupation.
- You experience the occupation and get a feel for the job.
- You learn a lot about the actual duties of an occupation by observing somebody at work.
- You may find a mentor, or a mentor may be recommended to you from this experience.

When you meet with your mentor, be prepared for the interview. You may have only a short time to present your portfolio, so be precise and know what you want to communicate. Appropriate dress, posture, tone of voice, eye contact, and common courtesies are important in the presentation. Remember to thank your mentor for his or her time and assistance.

3. Prepare a checklist of points to cover when contacting your mentor or a business for the opportunity to job shadow.
4. What are some advantages of presenting a portfolio to a mentor?

Compare your responses with those in the Appendix, Section 1: Activity 3.

Your Portfolio Presentation



The following suggestions should be considered when presenting a portfolio:

- Discuss visuals and projects that showcase your best work and experiences.
- Include personal assessment and reflective writing. This helps you demonstrate your knowledge of your personal strengths and weaknesses and to show what you might have done differently to improve your work if you had the opportunity to start over again.
- Discuss your interests, your best abilities, and the highlights of your learning experiences.
- Highlight your innovative ideas, your creative abilities, your ability to work in a team, your leadership capabilities, and your ability to manage your learning.
- Include your experiences outside of school and both paid and unpaid work experiences.
- Organize your portfolio to demonstrate your best abilities and work for a particular purpose (for example, a specific job or art-school admission).



JIM WHITMER PHOTOGRAPHY

Family and friends can also provide insightful opinions, praise, or criticism about work in your portfolio.



If you have access to the Internet, you may find many suggestions for presenting your design portfolio to clients.

Some information may be located at the following uniform resource locator (URL):

<http://www.smartbiz.com/sbs/arts/mpy1.htm>

Admission to art and design colleges is competitive. In addition to transcripts, you have to submit a portfolio of your work for assessment.

Your portfolio is your ambassador; it tells the post-secondary institution who you are, what you can do now, and what you may do in the future.



If you have access to the Internet, use various search engines to find out what admission requirements are needed for some art and design post-secondary institutions.

You may find the following institutions of interest:

- Alberta College of Art and Design
<http://www.acad.ab.ca/>
- Emily Carr Institute of Art and Design
<http://www.eciad.bc.ca/>
- Sheridan College
<http://www.sheridanc.on.ca/>

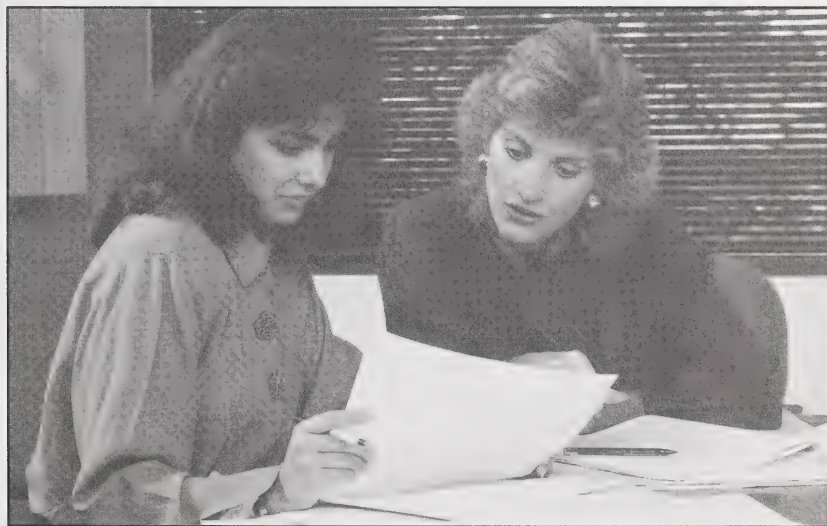
You could also contact these institutions for information by using the following addresses and phone numbers:

- Alberta College of Art and Design
1407 – 14 Avenue NW
Calgary, Alberta
T2N 4R3
Tel: (403) 284-7634
1-800-251-8290
- Emily Carr Institute of Art and Design
1399 Johnston Street, Granville Island
Vancouver, British Columbia
V6H 3R9
Tel: (604) 844-3800
1-800-832-7788
- Sheridan College
– Davis Campus
7899 McLaughlin Road
P.O. Box 7500
Brampton, Ontario
L6V 1G6
Tel: (905) 459-7533
- CAD/CAM Institute
Tel: (905) 874-4308
- Sheridan College
– Trafalgar Road Campus
1430 Trafalgar Road
Oakville, Ontario
L6H 2L1
Tel: (905) 845-9430
- Skills Training Centre
Oakville, Ontario
Tel: (905) 845-9430

5. What should you discuss and include when presenting your portfolio?

Compare your response with the one in the Appendix, Section 1: Activity 3.

Presenting your design portfolio allows you to highlight your skills, abilities, interests, and learning experiences.



Remember, a portfolio is an ongoing process of learning and reflecting. It can become a true treasure as you think about and celebrate your work and accomplishments.

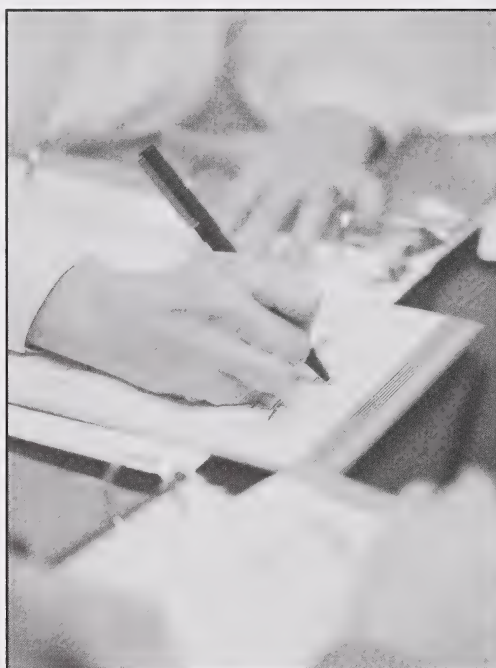
FOLLOW-UP ACTIVITIES

If you had difficulty completing the sectional activities, it is recommended that you do the Extra Help. If you did not experience difficulty, it is recommended that you do the Enrichment. You may do both.



Extra Help

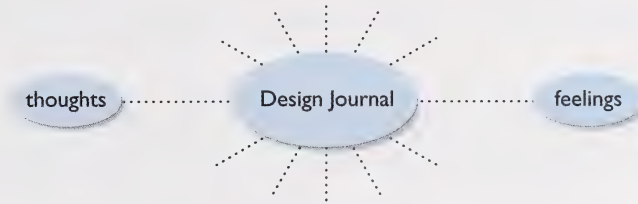
The purpose of the design journal is to begin to develop your thumbnail sketches of your own ideas and designs and to begin a study and collection of other people's designs that you find fascinating. It is intended to become a part of your high school Design-Studies program. You should continue to compile ideas that appeal to you, further develop your ideas, and create new ideas. Your design journal expresses a unique you. Add to your journal throughout the year.



A sketchbook or loose-leaf binder with unlined sheets of paper may be most suitable for organizing a design journal.

Your personal design journal can become the first stage in developing a portfolio. Creating a design journal gives you an opportunity to explore and develop a collection of images, projects, pictures, diagrams, or sketches that represent your design ideas.

1. Create a web diagram that illustrates some of the things you may want to include in your design journal. A diagram has been started for you.



2. What are three skills or abilities you may acquire through the development of your design journal?

Compare your responses with those in the Appendix, Section 1: Extra Help.

You should select your best drawings from the design journal to go into your design portfolio.

Before beginning a portfolio you should determine the purpose of your portfolio. Portfolios have many purposes and can become a life collection of work if desired. In order to get into any design school or art college, a portfolio of work is a must. A portfolio can also assist you in obtaining employment; when you take your portfolio of work to a job interview, the interviewer can quickly see your skill development and your ideas, creativity, and discipline. The design portfolio may be used when applying for jobs in the fields of design, drafting, graphic arts, and managing design projects.



Once the purpose of your portfolio has been established, you can concentrate on the mechanics of the portfolio. A portfolio can take on many forms. Some can fit into a binder; others can fit into custom-designed folders of any size. Photographs can be taken of larger pieces of work and placed into the portfolio. A videotape can be used to keep track of some of your work.

As portfolios are needed for various purposes, you can custom design them to other specifications. Keeping your work in plastic sleeves allows you to change its position or presentation; at the same time, your work is protected.

3. Summarize the mechanics of organizing and maintaining a portfolio.

Compare your response with the one in the Appendix, Section 1: Extra Help.

Activity 3 emphasized the presentation of a portfolio. There are certain strategies you can use to strengthen your portfolio presentation. They include the following:

- Discuss the visuals and projects that showcase your best work.
 - Include personal assessment and reflective writing to help you improve your work.
 - Discuss your interests and abilities.
 - Highlight your innovative ideas, creative abilities, leadership capabilities, and teamwork abilities.
 - Include outside school experiences and paid and unpaid work experiences.
 - Organize your portfolio to demonstrate your best abilities and work for a particular purpose (for example, a specific job or art-school admission).
4. How will the strategies you just read about help you strengthen your portfolio presentation?

Compare your responses with those in the Appendix, Section 1: Extra Help.

The role of a mentor is to guide you, listen to you, and give you advice.

After setting up an appointment and presenting your work to a mentor, you should gain valuable knowledge about improving your work and encouragement to continue with your work.



5. Explain why your design portfolio—not your design journal—is presented to mentors and employers or used for admission to post-secondary institutions.

Compare your response with the one in the Appendix, Section 1: Extra Help.



Enrichment

Do **one or more** of the following.



1. If you know of an artist or designer who has attended a post-secondary institution, contact him or her and talk to this person about the requirements for his or her portfolio. Prepare a report on your findings.



2. Most post-secondary institutions will offer information such as the following on their websites:
- course calendars
 - timetables
 - course requisites
 - registration forms
 - costs
 - dates and times of courses offered
 - examples of student work
 - accommodation information

Many institutions also offer courses online. You may be able to complete a program right from home!

Use a search engine to discover post-secondary art/design institutions. Contact one or more of these institutions for information.

3. Employability skills are skills that are developed over a lifetime; each experience strengthens or develops skills within you. Complete the following chart to assess your skills and set goals for skills you would like to work on and improve. Rate yourself on a scale of 1 to 4, with the number 4 identifying items that require the greatest improvement and the number 1 identifying those requiring the least improvement. For each item, complete the sentence: I... .

Employability Skills		
Applied Academic Skills	Personal Management Skills	Teamwork Skills
__ Follow instructions.	__ Display responsibility.	__ Work co-operatively in a group.
__ Communicate well through writing.	__ Display dependability and positive values.	__ Participate in teamwork actively.
__ Use specialized knowledge to get a job done.	__ Set and accomplish goals by managing time and resources.	__ Compromise, if necessary, to best accomplish goals.
__ Apply research and investigation skills.	__ Make appropriate decisions.	__ Collaborate with students and teachers.
__ Apply problem-solving skills.	__ Value and practise integrity.	__ Lead or follow to best accomplish the goals.
__ Apply creative- and critical-thinking skills.	__ Take informed and educated risks.	__ Contribute to the goals of the group.
__ Make associations in learning within a variety of subject areas.	__ Meet school/work deadlines and show accountability.	__ Listen and respect group members' ideas and views.
__ Integrate and apply learning into life's experiences.	__ Know personal strengths and weaknesses.	__ Work in changing settings and with different people.
__ Use technology and information systems effectively.	__ Identify and suggest new ways to get the job done creatively.	__ Value and acknowledge the work of others.
__ Develop and enhance multi-tasking abilities.	__ Demonstrate organizational skills.	__ Show evidence of leadership skills.
__ Evaluate and synthesize learning and living experiences.	__ Follow written instructions and directions.	__ Respect the rights, well-being, and property of others.

Applied Academic Skills	Personal Management Skills	Teamwork Skills
___ Evaluate effects of changing technologies and scientific discoveries.	___ Follow verbal instructions and directions.	___ Demonstrate sensitivity and empathy for varying needs and for the concerns of others.
___ Exhibit positive attitudes and behaviours.	___ Show responsible independence.	___ Function as a teacher.
___ Apply planning skills.	___ Pay attention to detail.	___ Function as a learner.



4. a. To arrange for job shadowing for the purpose of finding a mentor or finding out more information about a job that interests you, prepare questions for each of the following topics:

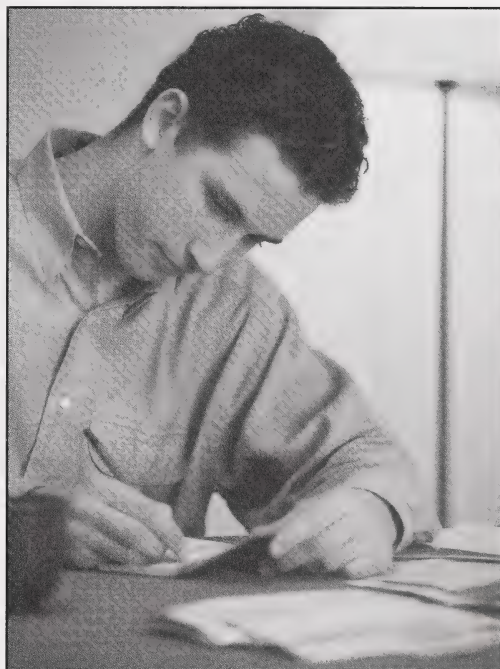
- description of career field
- choices in career field
- education and/or training for the career field
- satisfactions in the career field



- b. Present your information in the form of a report. Writing this report should be an interesting and enjoyable project. It will give you the opportunity to gather information and then write about a subject in which you have a particular interest.

The experience of gathering the material, organizing it, and presenting it in a clear and logical form is one that can bring you a feeling of satisfaction and achievement.

Use a word-processing program if you have access to a computer.



Compare your responses with those in the Appendix, Section 1: Enrichment.

CONCLUSION

As you worked through this section, you had the opportunity to explore and collect many ideas. These ideas may have taken the form of short, written notes, quick sketches, postcards, diagrams, images, and pictures in your design journal. Your notes may have included your thoughts, ideas, experiences, feelings, impressions, observations, descriptions, and plans.

You also worked on a design portfolio—a collection of your best finished works. Post-secondary institutions require students applying for admission to art/design programs to submit examples of their best works; many employers ask for portfolios. The quality of your portfolio may be the determining factor in your acceptance into a post-secondary art/design program or in impressing your employers. As you worked through the section, you may have found that you needed to discuss your progress or get input about your ideas and sketches. It is important that you keep in touch with a mentor to discuss your progress or to simply get a new point of view.

Building a portfolio from your design journal is a lifelong process; designing portfolios for job interviews and for entry into post-secondary institutions may become a necessity. Therefore, value your work, take pride in it, and present it proudly to give yourself that additional advantage of being prepared for a potential career in the field of design. Adapt your portfolio to meet each opportunity.



ASSIGNMENT

Turn to Assignment Booklet A and do the assignment for Section 1.



Elements and Principles of Design



JAY is preparing a design for a CD jacket insert. He knows his design must attract the consumer's attention. By using the elements and principles of design he will create a graphic with a visual message. His design will let customers know what is in the package and entice the customer to purchase the CD.

Jay will use the elements and principles of design to create a CD jacket insert that will perform its intended job—to attract customers.

In this section, depending on your experience in Design Studies, you will review or discover the elements and principles of design. You will use this information to design two-dimensional graphics that will send a message to a viewer or purchaser. Being able to use the elements and principles of design to communicate your ideas is an important skill. The elements of design (line, shape, form, space, texture, pattern, and colour) are the fundamental tools Jay will use to create an endless number of possible combinations. The principles of design (balance, unity, contrast, emphasis, proportion, movement, and rhythm) are the general guidelines he will use for putting together the elements of design.

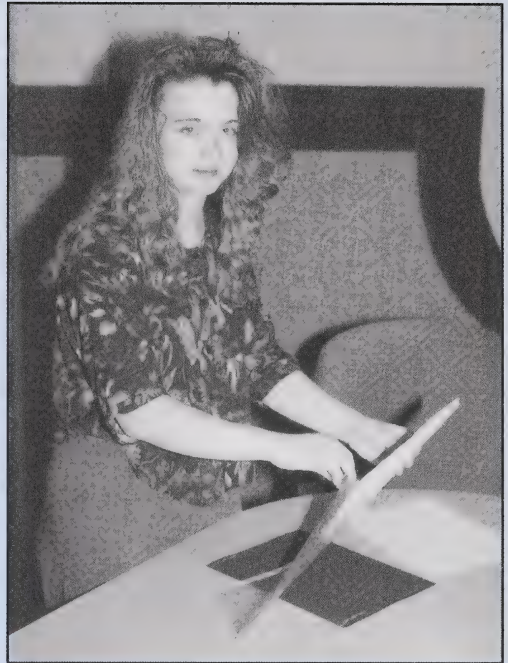




Having completed Section 1, you should now be familiar with the process for creating your design journal and portfolio.

You will see the portfolio icon beside various exercises throughout the course. The icon will remind you that the two-dimensional work you are doing may be appropriate for your design portfolio. You will continue to add to your portfolio throughout the remainder of the course.

For the final course assignment, which is to be submitted to your teacher after Section 3, you will send in your design portfolio for evaluation.



ACTIVITY I

Elements of Design



elements of design: a designer's tools for expressing ideas visually

They include line, shape, space, form, texture, colour, and pattern.



A mechanic uses many tools—wrenches, pliers, and screwdrivers—to fix things. Likewise, a designer uses tools to make statements about graphics. These tools are called the **elements of design**, which are as follows:

- line
- shape
- space
- form
- texture
- colour
- pattern

1. a. List several items that you have encountered today that exhibit elements of design.
- b. Which element of design impressed you the most? Why?

Compare your responses with those in the Appendix, Section 2: Activity 1.

You experience the elements of design in daily life. For example, you see lines (like the branches on trees) every day. You see shapes and forms, like buildings and sculptures. You see patterns when you see stripes or spots on an animal. Space is around you wherever you are. Every time you touch something—peanuts in a shell or dew drops on a flower—you feel texture. Colour is also an element of design that is everywhere—in the food you eat, in the clothes you wear, and in the materials you read.



Line

Kinds of Lines

▼
line: a path that leads the eye through space between two points

▲
A **line** is the distance between two points; it is a path that leads the eye through space between the points. Lines can be straight, curved, or drawn at an angle (like a diagonal line). Lines can intersect or cross each other. They can come to a point and form angles.



2. Use a blank piece of drawing paper to complete the following line exercises.
- Draw a series of 20 horizontal lines, each about 75 mm long. Aim to keep the lines as straight as possible without using a ruler. **Hint:** To do this, hold your pencil lightly and keep your wrist relaxed.
 - Draw a series of 20 vertical lines, each about 75 mm long. Keep the lines as straight as possible without using a ruler.
 - Draw two dots about 100 mm apart; then, working from left to right, join the dots using a straight line. After repeating this exercise ten times, try connecting dots vertically.
 - Draw lines at right angles to each other (lines may cross or simply meet each other). Alternate starting with either the horizontal or vertical line. Use a variety of line lengths and complete at least ten right angles.

Lines that stay the same distance from each other are called parallel lines. Here are some examples.



Lines can also branch. The picture of the tree (to the right) illustrates lines coming from many angles and points—the twigs, the branches, and the trunk.



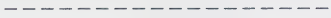
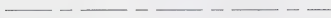


The branching lines help communicate the species of tree and its individuality. They make for an interesting composition.



- Draw thumbnail sketches of the lines you would see in a maple, spruce, palm, and/or willow tree.
- Describe the position of the majority of the lines in your tree sketches.

Compare your responses with those in the Appendix, Section 2: Activity 1.

Engineering and drafting companies use lines to make their drawings universally understandable. Six of the most common types of lines used in these fields appear in the following chart.

	Thick, continuous lines are used in visible outlines and edges.
	Thin, continuous lines are used as dimension lines, projection lines, hatching lines, and outlines of adjacent parts.
	Thin, short dashes are used as hidden outlines and edges.
	Thin, long-chain lines are used as centre lines.
	Thick, long-chain lines are used as cutting planes.
	Thick, wavy lines are used as short break lines and irregular boundary lines.

4. You have just read about many different kinds of lines. Which appeals to you the most and why?

Compare your response with the one in the Appendix, Section 2: Activity 1.

Characteristics of Lines

Lines can be used to show direction and movement.

- Repeated horizontal, parallel lines suggest lateral movement.
- Repeated vertical, parallel lines of various lengths suggest the impression of height.

(In Activity 2, you will be learning more about how lines can show movement.)

5. Sketch at least three examples of lines showing different directions and motions.

Compare your response with the one in the Appendix, Section 2: Activity 1.

Many artists and designers like to use lines effectively to create visual effects. They also use lines to create fascinating illusions.

6. Determine visually which of the following horizontal lines is longest. (Do **not** measure!)

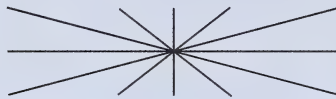
a.



b.

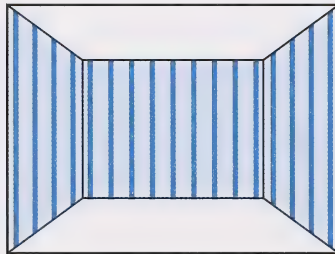


c.

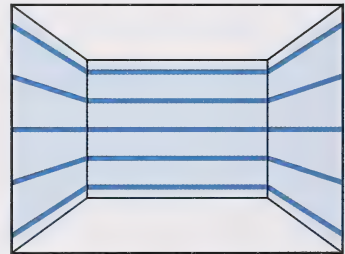


Compare your responses with those in the Appendix, Section 2: Activity 1.

Interior designers use lines to create illusions; they use horizontal lines to make a room look larger or wider than it really is and vertical lines to make a room look narrower or taller. For example, vertical lines tend to make a room appear higher, but smaller in other directions, as shown in the first diagram. Horizontal lines tend to make the walls look longer, but the ceiling lower, as shown in the second diagram.

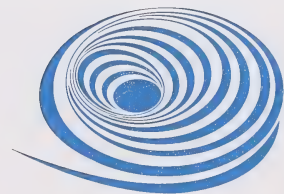


Using vertical lines



Using horizontal lines

Lines can express excitement. Examples of this are concentric lines (circles with the same centre) and spiral lines.



Lines can also express or communicate feelings. Look at the following examples.



Anger



Joy



Heavy, jagged lines can look angry and violent.

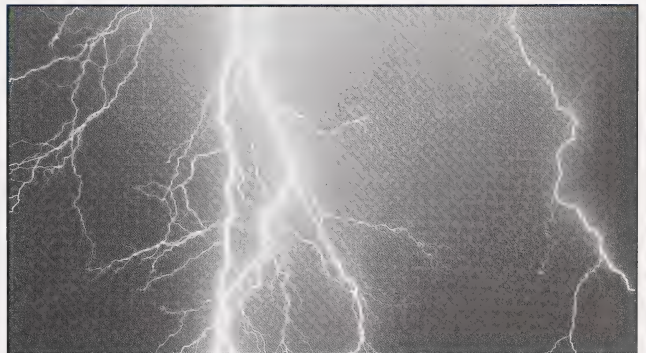


Delicate, curving lines can look happy.

7. a. What type of lines can express anger or violence?
- b. What type of lines can express happiness or joy?

Compare your responses with those in the Appendix, Section 2: Activity 1.

Lines can be used in many ways. Since they are the paths or distances between two points, they cause the eye to move from one point to another. They show direction and movement; they create interesting visual effects. They can also show emotion and express mood.



Shape

Have you ever tried to design something using only lines? If you did, what happened when one line circled back on itself or it crossed another line? Did you form different shapes?

▼
shape: the element of design that is two-dimensional and encloses space
▲

Shape is the element of design that encloses space and tells you whether something is a banana, a cloud, a car, or a toy. It is two-dimensional.



When a line travels a distance and returns to its starting point, it encloses space and creates shape. You could say that a shape is made up of connected lines.

Shapes fall into two basic categories—organic and geometric. Organic shapes are free-flowing, like the following examples.



The second category of shapes is geometric. Most geometric shapes are easy to recognize. Can you identify the circle, square, triangle, pentagon, and hexagon in the following shapes?



8. Re-examine the organic and geometric shapes you have just studied. Do you agree with the following statement? Support your answer.

Heavy lines can make a shape appear to be very solid; faint, thin lines can give a drawing the impression of being very light and fragile.

9. Many cartoons are based on geometric shapes. Identify at least three different geometric shapes in the following cartoon.



10. Use a blank piece of drawing paper to complete the following shape exercises.
- Practise drawing right angles by crossing lines on the left or right side of horizontal lines and on the top or bottom of vertical lines.
 - Practise drawing different sizes of squares and rectangles.
 - Practise drawing freehand circles and ellipses (ovals).
 - Draw a square and then visualize a circle to fit inside. Mark the centre points of each side of the square where the circle will touch the sides of the square. Join the points on each side to complete a diagram of the circle. Use a rectangle shape and create several different sizes of ellipses with the same method.
11. Create a variety of shapes using heavy lines and a variety of shapes using faint lines.

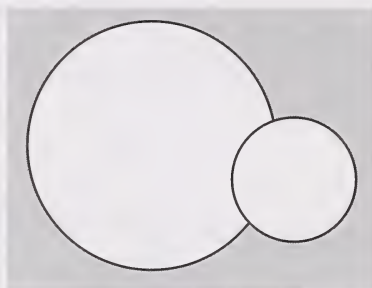
Compare your responses with those in the Appendix, Section 2: Activity 1.

**overlapping:**

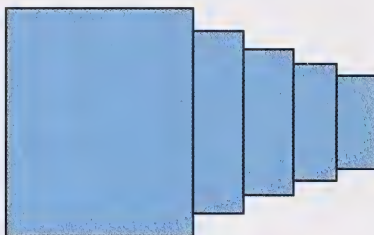
having one shape or object in front of another, often to create depth in a picture



Shapes can lie one on top of another. This is called **overlapping**; this technique is used to create depth in a picture. If one shape or object covers part of the visible surface of another, this shape or object appears to be nearer. For instance, if a small ball is placed in front of a larger ball, the small ball appears closer than the larger one, despite it being smaller in size.



Look at the arrangement of blocks in the following diagram. A larger object may appear to be closer than smaller objects.



12. Using the following steps, create a design from shapes that have been cut out of paper.

Step 1



Using different colours of construction paper, cut many shapes of different kinds and sizes. (The same shape may be used several times, but the size should be different each time.) Cut out at least 15 to 20 shapes.

Step 2



Choose some large shapes and some small ones. Arrange the shapes—one at a time—on a full sheet of heavy paper (you could use a sheet of construction paper).

Step 3



Glue each shape so that it sticks to the paper.

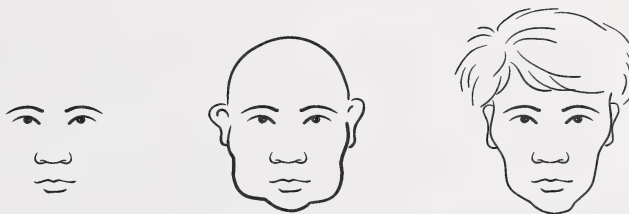
Step 4



Add shapes until the entire page is covered. To do this, you will have to overlap many shapes.

Compare your response with the one in the Appendix, Section 2: Activity 1.

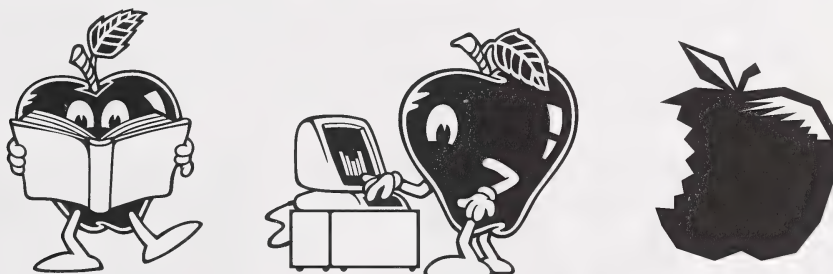
13. Examine the faces drawn here.



- a. Did you notice how very slight changes in the angle, curve, or heaviness of a line can completely alter the shape and character of the face? Give an example of one such change.
- b. Trace the main features of the face (eyebrows, eyes, nose, and mouth) on a piece of paper. Alter the shape and character of the face by changing the weight or angles of the lines or adding different features. Try to complete three different faces.

Compare your responses with those in the Appendix, Section 2: Activity 1.

Shapes can be a real object or an abstract representation of an object. For example, a triangular sign means *caution* and an octagonal sign means *stop*. You often see some specific shapes as symbols with additional meanings. An apple—real or as an abstraction—may be seen as a symbol of education, a brand of computer, or a component of well-being relating to nutrition.



14. Identify what each of the following shapes represents.

- a.
- b.
- c.
- d.
- e.
- f.
- g.
- h.

Compare your responses with those in the Appendix, Section 2: Activity 1.

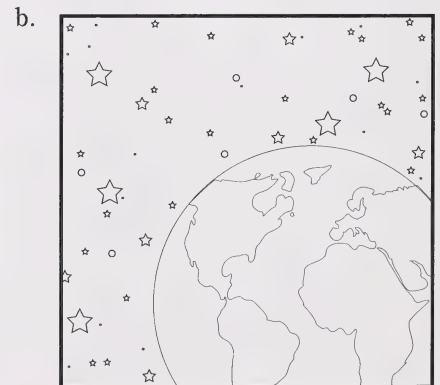
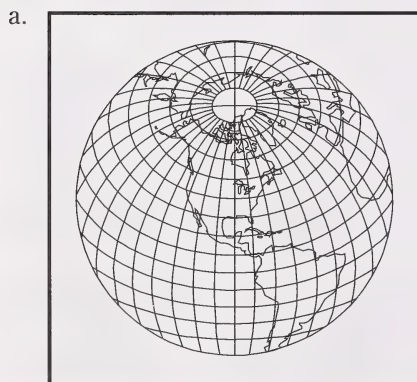
Space

Space is all around you. You may be in a place, like a small car or telephone booth, where you will find very little space. You may have stood in the middle of a football field or on top of a mountain and found yourself surrounded by much space.



Shapes occupy space. There are no specific rules about spacing shapes, but you, as the designer, must decide whether objects touch or overlap. Space and interest are also created by grouping objects. The designer must decide whether the design and space communicates motion and interest, whether it is monotonous, or whether it is merely a series of lines and shapes and nothing more. Use space carefully.

15. Which of the following designs illustrates the use of space more effectively? Support your answer.

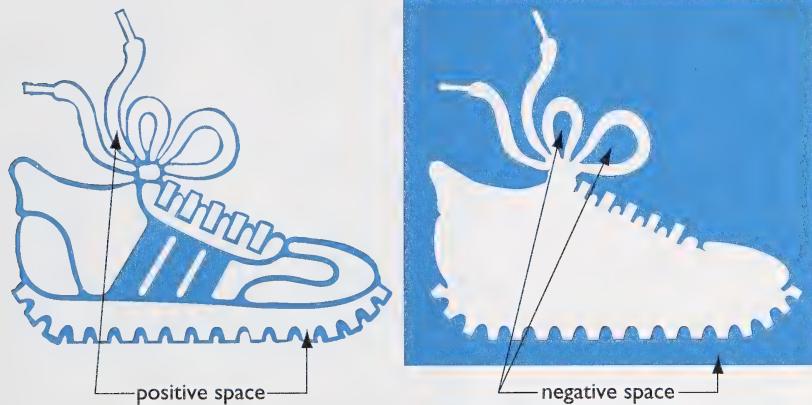


Compare your responses with those in the Appendix, Section 2: Activity 1.

Think of your body and all the objects around you as positive space. These are solid or concrete things.

Examine the two diagrams of a sneaker.

The sneaker in the picture to the left is positive space. Positive space is the space an object occupies. It is a solid thing.



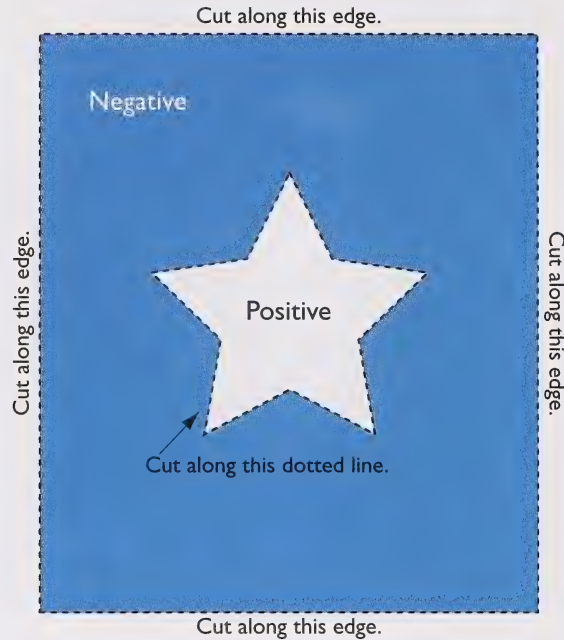
In the picture at the right, notice only the coloured, shaded area all around and within the loops of the shoelace. The shaded area is the negative space. It is the space surrounding an object. This space is not a solid or concrete thing.

In artwork, the negative space can become more important to the design than the positive space. The negative spaces often create more of a pattern than the positive spaces. If you approach a design by drawing only the negative area, the positive area will tend to jump out at you after you are finished.



You may find you are able to obtain better results in your drawing because you are not obsessed with drawing the positive shapes first.

16. Trace the following graphic on a plain, white sheet of paper. With scissors or a utility knife, cut out the area labelled “negative” from the star shape.



Place both cutouts side by side. What do you notice about each cutout?

Compare your response with the one in the Appendix, Section 2: Activity 1.

Form

In one of your art courses in elementary school, you had the opportunity to experiment with a piece of clay. You moulded it into a toy, an animal, or something else that you liked. At the time, you probably did not think of the moulded object you created as a **form**.

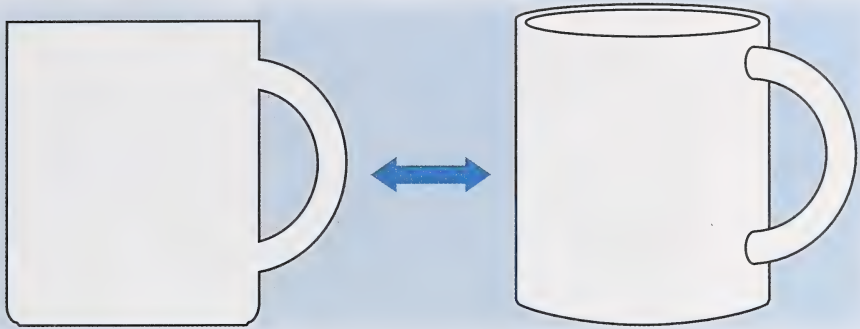
▼
form: an object that has height, width, and depth
▲

Form can be described as the shape or structure of a three-dimensional object—an object that has height, width, and depth. Shapes are merely shapes until they take on the form of an identifiable object with all three dimensions.



CORBIS/ANTHONY BANNISTER: ABPL

Drawn shapes can be transformed into forms by adding lines.



This image shows only the edges (contour) of the mug, so it is two-dimensional and is called a shape. Only the height and width have been shown.

Curved lines provide more information in this drawing, so it seems as if the mug is rounded, or has depth, the third dimension. It looks more like a real mug.

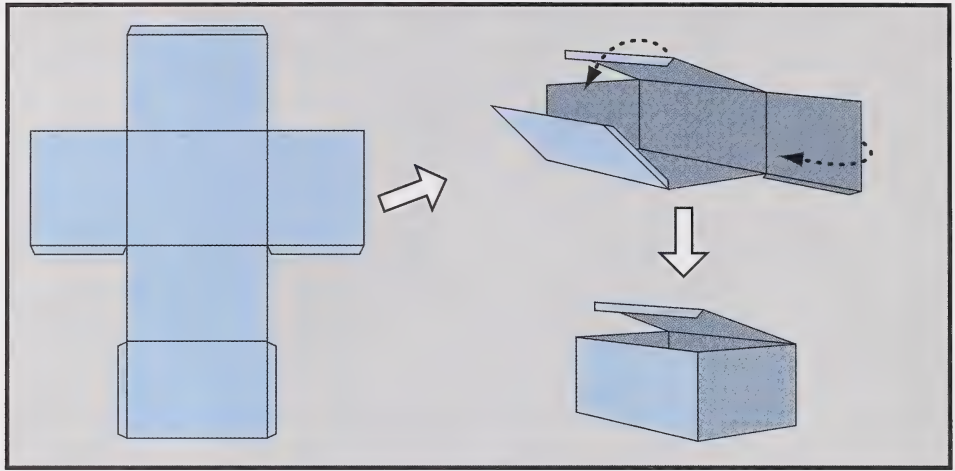
17. What is the difference between shape and form?

Compare your response with the one in the Appendix, Section 2: Activity 1.

To create the element of form, it is necessary to give the details of the drawing or design's characteristics. Shape, size, proportion, colour, and texture are all combined to create form.



You can practise creating form by starting with basic geometric shapes. To view and create a three-dimensional form, it may help to experiment with creating the following. (**Note:** The diagram is **not** drawn to scale.)



The drawing of an object opened out this way is called a **development**.

18. a. Trace or photocopy the box pattern from the Appendix. Transfer (use carbon paper or glue the pattern) the development to heavy paper, such as construction paper or lightweight cardboard. Fold the paper inward on all the thin, short-dash lines. Glue the tabs to the appropriate sides to create a rectangular prism. Leave one side (the top) open.
- b. Observe all sides of your assembled box. Draw its contour so it becomes a two-dimensional design. Give the impression the top lid has been left open.

Compare your responses with those in the Appendix, Section 2: Activity 1.

Texture

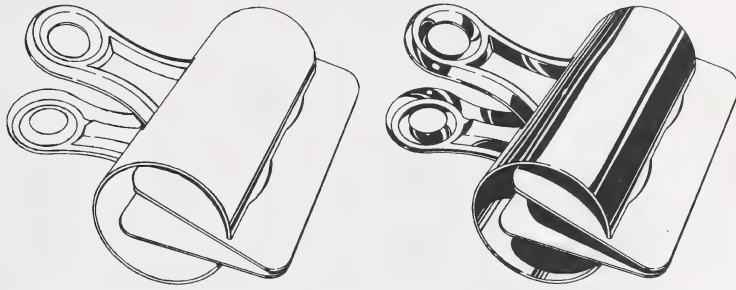
Have you ever touched something that gave you an enjoyable feeling because of its soft, smooth surface? Or gave you an unenjoyable feeling because it was rough, coarse, or prickly?

Look at things around you. Rub your hand on a cat's fur, a tree trunk, the stucco on a house, or the glass of a window. Place a plain piece of paper over a coin. Rub a pencil over the paper. What happens? The different effects that you experience by touching and rubbing are the result of variations in **texture**.

▼
texture: the element of design that refers to the feel (rough, smooth, soft) of a surface
▲

Texture describes the surface of an object—whether the object is smooth or rough. Light reflected off the surface of an object will cause it to appear shiny, dull, light, or dark depending upon the texture of it. When added to designs, textures add personality to the work.

You can use lines to define textures. By varying the thickness and spacing of lines, the appearance of a variety of textures can be achieved.



▼
hatching: lines drawn close together to create texture

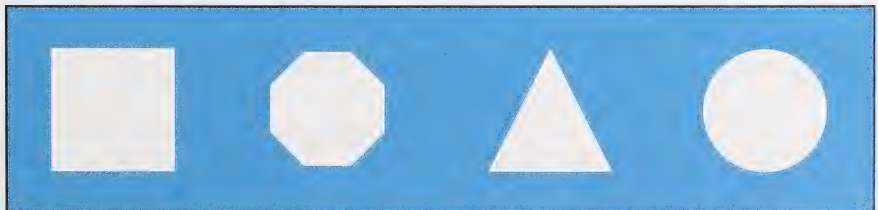
crosshatching: crossed lines used to shade a drawing and increase the three-dimensional effect
▲

Simple drawings can be changed by adding extra line work called **hatching** and **crosshatching**.



Notice how the added lines—hatching and crosshatching—give the impression of forms, shapes, and textures in the drawing.

19. Copy one of the following shapes or create your own two-dimensional shape, and show at least two variations in texture using hatching and crosshatching.



Compare your response with the one in the Appendix, Section 2: Activity 1.

The illusions of space, depth, and form can also be created by varying and graduating textures. Texture and the impression of shape and/or form can be achieved by using dots, similar to using lines in hatching. The illusion of depth or distance can be created by using darker areas of dots placed close together and graduating to single, loosely spaced dots.



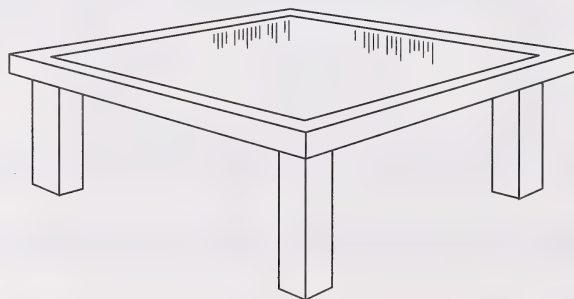
20. Complete an additional shape and/or form and use graduating dots to create texture and the impression of depth or distance.

Compare your response with the one in the Appendix, Section 2: Activity 1.

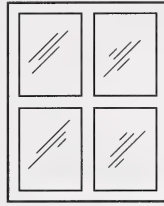
The effect of light and shade can be achieved by using the element of texture. Surface areas that are shaded from light would be textured with more detail. The surfaces that face the light will have little or no texture drawn on them. When objects are textured evenly they tend to look flat.

To give drawings the look of a smooth, shiny surface, you could use highlights and reflections. Drawing a number of short parallel lines across the surface will create this effect.

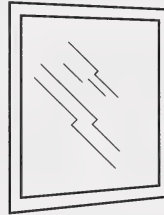
For horizontal surfaces, like a table top, the lines should be drawn vertically to create the impression of a smooth, shiny surface.



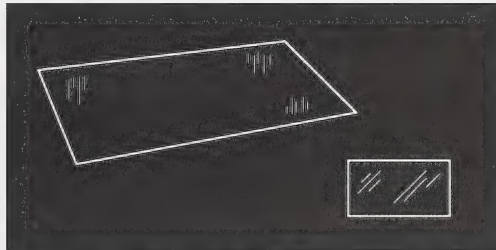
For vertical surfaces, such as windows, the lines should be drawn diagonally, as seen in the following diagram.



For shapes you want to appear transparent, use thin, broken lines.



Reflections can be created by using high contrasts of dark and light colours. You could also use a dark background paper and draw in the highlights with white pencils.

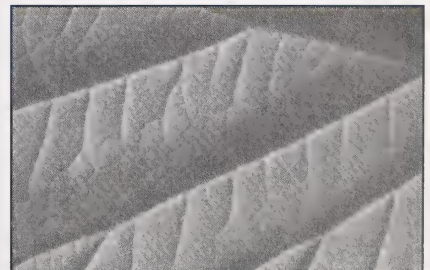


21. Draw a cube or another simple object with the look of a smooth, shiny surface or transparency.

Compare your response with the one in the Appendix, Section 2: Activity 1.

It is important to show texture in design drawings because texture will create more interest, and it can also indicate the material the object may be made from.

Can you identify the object in the photo to the right? Did you guess that it is a leaf?



Texture may be added to a piece of artwork by

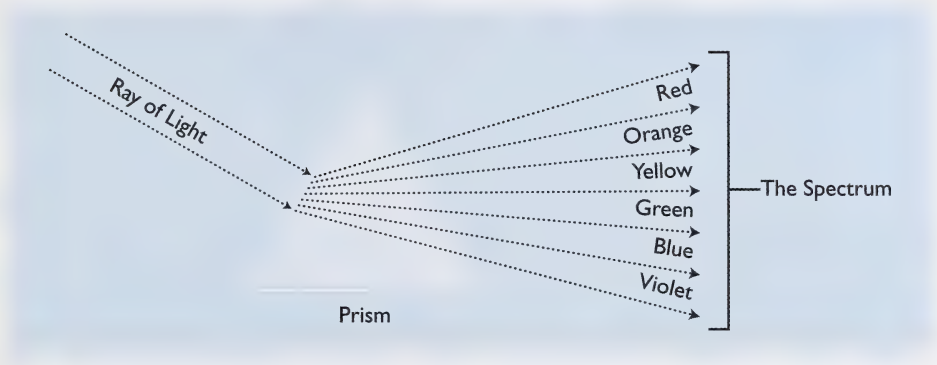
- using charcoal to add the appearance of a dull texture
- adding layers of paint
- allowing water colours to run or preventing them from running
- spotting, dabbing, dotting, and blending lines
- using brush strokes, streaks, or scratches
- spattering paint from a stiff brush
- placing the paper over a textured surface and rubbing lightly with a pencil or crayon over the drawing
- adding dabs of paint on the drawing with a sponge
- using pens and markers with a variety of thicknesses
- using ink washes (Ink or paint is diluted and applied to one side of the drawing for a shadow effect.)
- using a variety of textured paper, wood, or fabric
- using a range of tone and texture transfers available in art shops



Colour

An important element in any part of design is colour. Colour is important in design because it creates an instant response. It possibly has the biggest influence on consumers when they purchase items. Colour can highlight objects and affect your mood and emotions.

Sir Isaac Newton looked at colour scientifically in the 1660s and discovered that white light could be split into different colours by directing it through a prism.

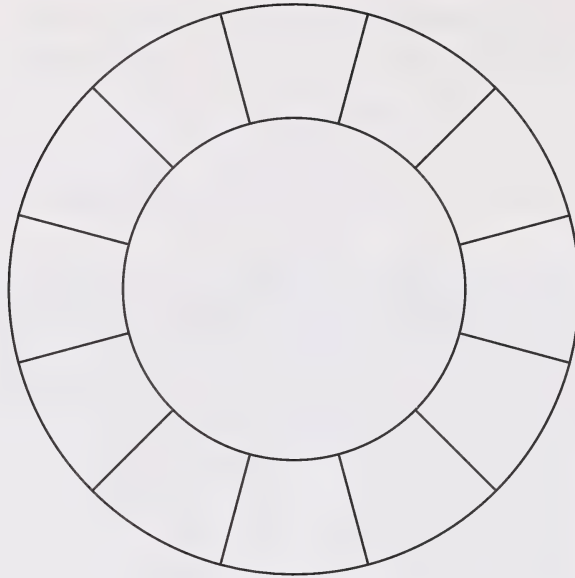


Where do you see light split into the spectrum in nature?

Find the colour wheel in the Appendix. Notice how the colour wheel has the same progression of colours as the spectrum, but the colours are bent into a circle. The colour wheel consists of primary, secondary, and intermediate colours. The primary colours are red, blue, and yellow. They are called primary because they cannot be produced by mixing other colours. The secondary colours are green, violet, and orange. Secondary colours are made by mixing two primary colours. The intermediate colours result from mixing a primary and a secondary colour.



22. Using a full sheet of paper, make a drawing like the following diagram.



Use the preceding information and the colour wheel in the Appendix to indicate the primary, secondary, and intermediate colours. You may wish to colour or paint your diagram in the appropriate colours.

Compare your response with the one in the Appendix, Section 2:Activity 1.

The colour wheel can help you understand why some colours look better together than others. Colours that are close to each other on the wheel, such as yellow and orange or blue and green, go well together and create harmony. Red and green are opposite each other in the colour wheel; yellow and violet are opposite each other. These combinations of colours opposite each other create contrast; opposite colours intensify each other.



monochromatic:
of one colour

analogous:
colours next to each other on the colour wheel

complementary:
colours that are opposite each other on the colour wheel; for example, red and green

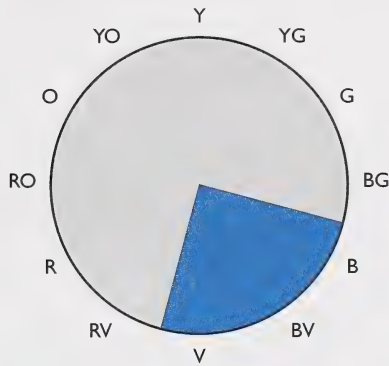


Designers often use the following colour combinations:

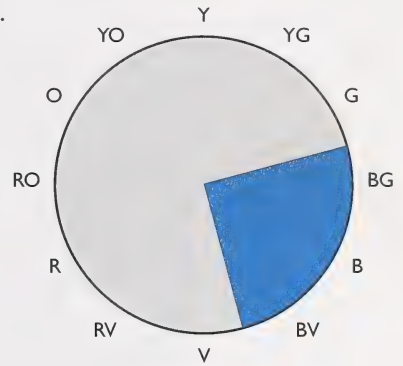
- **monochromatic:** variations of one colour, such as powder blue, navy blue, sky blue, and baby blue
- **analogous:** colours close to each other on the colour wheel, such as blue-green or yellow-green
- **complementary:** colours opposite each other on the colour wheel, such as red and green, blue and orange, and yellow and violet
- **triads:** combinations of three colours equally spaced on the colour wheel, such as red, blue, and yellow

23. Examine the colour-shaded areas in each of the following colour wheels and identify the colour scheme or combination each diagram is indicating.

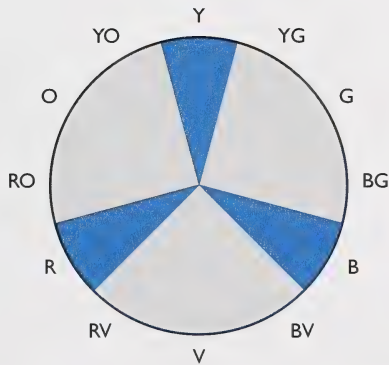
a.



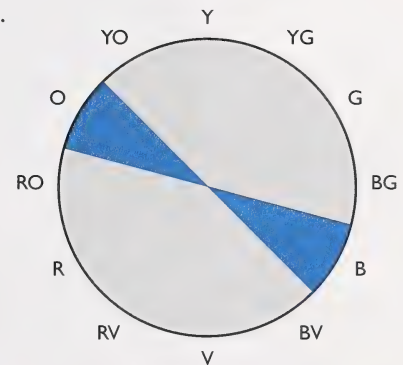
b.



c.



d.



Compare your responses with those in the Appendix, Section 2: Activity 1.

Colour has three properties. These properties are often referred to as the dimensions, qualities, or characteristics of colour. They include the following:

- hue
- value
- intensity

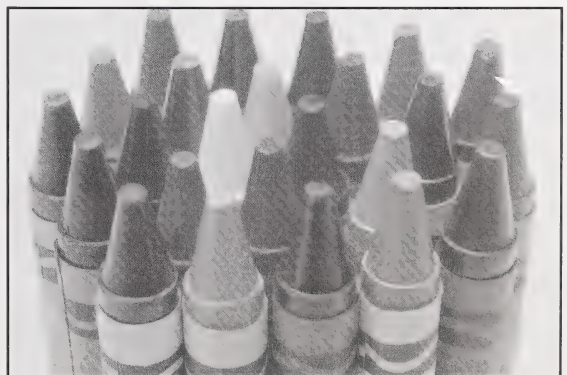
Hue



hue: the name of a colour



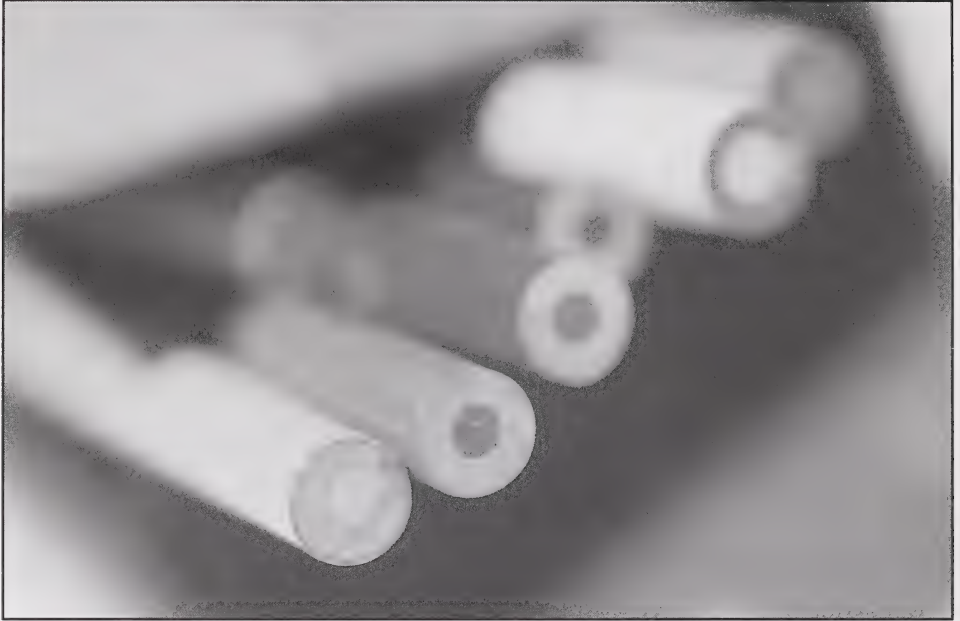
Hue is the name of the colour. It indicates the colour's position in the spectrum and is referred to as the colour's name. Each colour has a specific wavelength that determines its position in the spectrum. Red has the longest wavelength; violet has the shortest wavelength.



Value

▼
value: the lightness or darkness of a colour
▲

Value refers to the lightness or darkness of a colour. White is the lightest value and black the darkest. Adding white to a colour produces a **tint**. Add white to red and you will get the tint of pink. (There are examples of tints on the colour-wheel page in the Appendix.) Adding black to a colour produces a **shade**. Add black to red and you get the shade of maroon. Adding grey to a colour produces a **tone**.



▼
intensity: the brightness or dullness of a colour

Intensity

Intensity refers to the brightness or dullness of a colour. It refers to the quality of light in a colour. Dull colours have a calming or saddening effect. Bright colours create exciting, cheerful effects.

Colours can have more intensity if they are not mixed with black. Using a deeper value of the same colour or mixing a complementary colour with the original colour will increase the colour's intensity. For example, to intensify green, add more green or red.

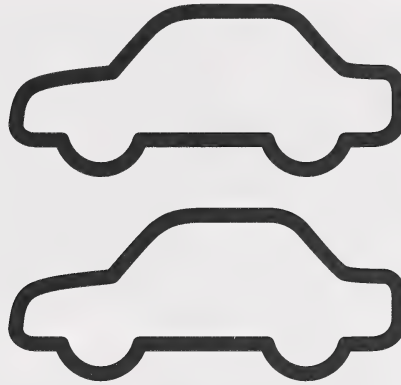
Colours are said to have temperatures. Some colours are considered **warm colours** and others are **cool colours**. Red, orange, and yellow are fire colours; you might use these colours to show crowds, activity, and tension. They are also good to use in happy pictures. Green, blue, or violet colours make people think of shady spots, cool streams, and mountains. These colours suggest peace and quiet.

Warm, light, and bright colours appear to come forward towards the viewer; cold, dark, and dull colours appear to recede into the distance. Reds appear to reduce space, and blues make space appear larger.

warm colours: colours like red, yellow, and orange, which seem to advance on a page and add warmth to an object

cool colours: colours like blue, violet, and green, which seem to recede in a picture or move away from the viewer
▲

24. Create two identical shapes or trace the two car outlines. Colour one shape a bright red (warm colour) and the second a dull blue (cool colour).



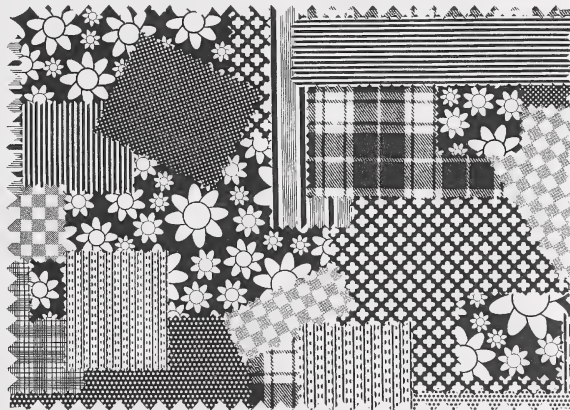
- Examine your pictures and decide which one stands out more.
- Which shape appears slightly larger than the other?

Compare your responses with those in the Appendix, Section 2: Activity 1.

Pattern

▼
pattern: a series
of repeated
elements of design
▲

Pattern is created through the repetition of lines, shapes, and/or objects. It is the arrangement of lines, shapes, spaces, textures, forms, and colours that can be used to create a composition. The same object or different objects can be used to create patterns. Patterns can create rhythm and unity in a drawing by being repeated. Fabrics will often have a repetitious pattern on them.



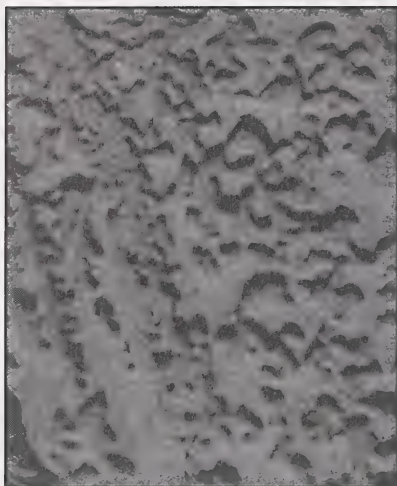
Notice the various patterns that are repeated in the swatch of fabric. Did you find flowers, stripes, dots, checks, and plaids repeated in different arrangements?



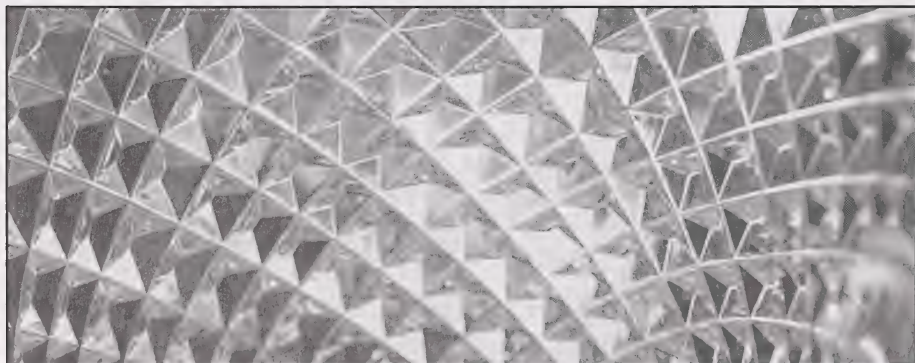
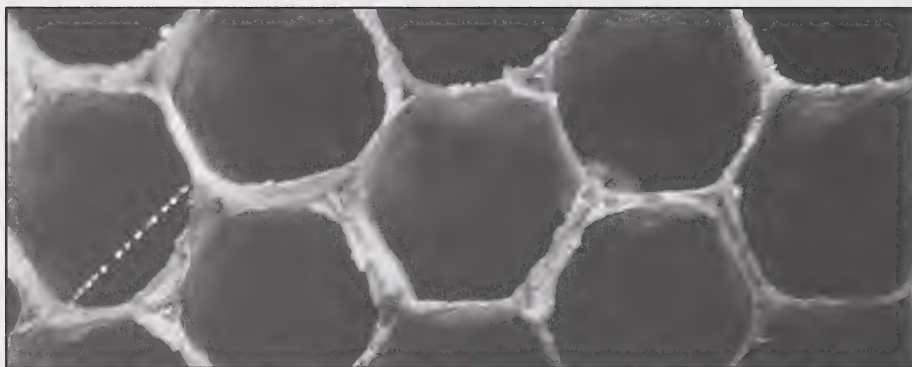
random: an irregular way of selecting; having no definite plan or arrangement



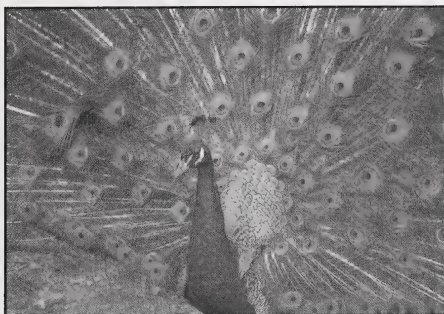
Nature is a good place to recognize patterns. The photographs of the wet sand patterns and the giraffe illustrate examples of **random** pattern.



Patterns may also be uniform or planned, whether produced by nature (like the hexagon shapes of the honeycomb) or produced by people (like the triangular shapes in a geodesic dome).

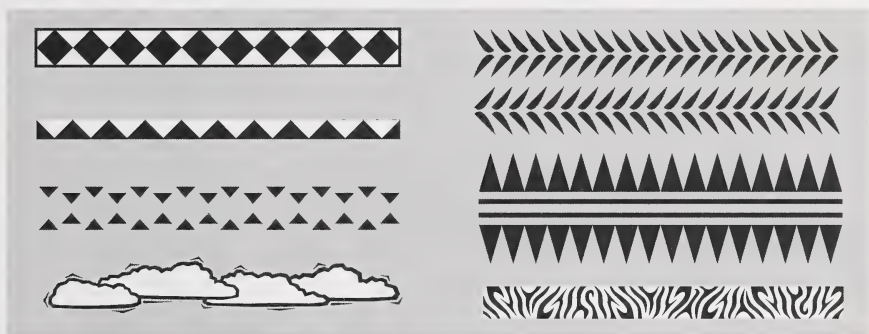


Patterns can also be radial, with shapes branching out from a central point. This type of pattern can be seen in the tail of a peacock and a fireworks display.



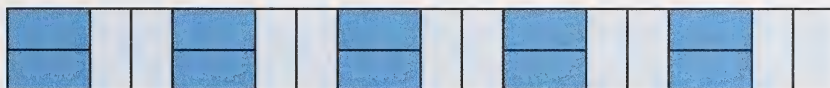
▼
motif: a distinctive, repeated element of design
▲

The basic element of a pattern is the **motif**. This can be a simple organic shape or geometric shape. Repetition of the motif in the pattern can also create rhythm and movement.



▼
tessellations: arrangements of identical figures that cover a surface without gaps or overlapping
▲

Repetition can be developed through the use of **tessellations**—identical interlocking shapes. The tiles on a floor or bricks in a wall are examples of tessellating patterns.

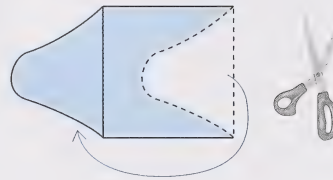


Creating a tessellating pattern is simple. You can create a tessellation by following these steps:

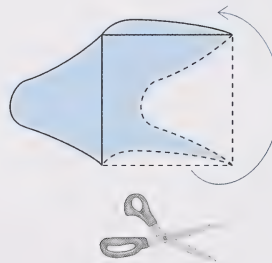
- Step 1** Start with a figure you know will tessellate (a square or equilateral triangle are good shapes) and make a template on stiff paper. (This example uses a square.)



- Step 2** Cut a shape out of the template. (This shape may be organic or geometric. You may wish to try several variations.) Slide the shape to the opposite side of the template and tape it securely.



- Step 3** Cut a shape out of another side of the template. Slide this shape to the opposite side of the template and tape it securely.

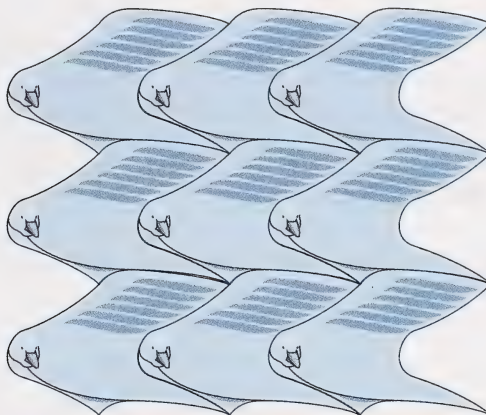


- Step 4** Try to imagine what your template represents. (Perhaps you think the shape looks like a bird.)

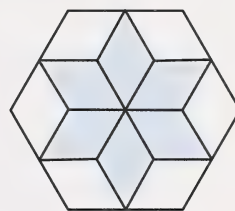
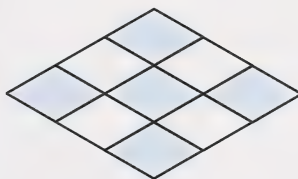
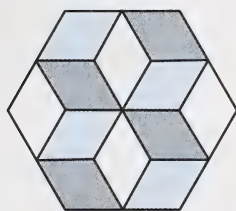


Step 5

Position the template on a sheet of paper and cover the page by tessellating the shape (that is, arranging the shape to cover the surface without gaps or overlapping). Afterwards, colour the design to illustrate what you imagined the shape to be.



The following designs are made with identically shaped bricks of different colours. Can you identify the tessellated shape in each design?



The Internet has many sites devoted to tessellations. Some information about making them may be located at the following uniform resource locator (URL):

- <http://www.worldofescher.com/>

Use search terms like *Escher* or *tessellations* to locate more sites.

25. Create a tessellating pattern. Drawing a grid or using grid or graph paper may help you develop the pattern.
26. Examine magazines for two pictures showing pattern—one that shows a random pattern and one that shows a uniform or planned pattern. You could also use catalogues or the Internet as sources of patterns.

Compare your responses with those in the Appendix, Section 2: Activity 1.

The following seven elements of design are the basic parts of any artwork:

- line
- shape
- space
- form
- texture
- colour
- pattern

The elements of design are the “what” of the design or the components of the design. They represent the fundamental and powerful tools for the designer to use. These elements of design are the parts of a design that a designer plans.

The elements can be used to achieve special effects and feelings. Lines can be used to create shapes and textures.

Shape relies on line, colour, and surface texture to achieve its intended composition. Colour is used to create special effects. It can give the feeling of warmth or cold and it can make things appear close or far away. Texture is used to add detail to an object.

Can you identify the seven elements of design in the following graphic?



If you have the opportunity to access the Internet, check out examples where the elements of design are used by retail businesses in their product presentations, advertising, and promotions.

Use several search engines to explore terms like *design elements*, *advertising*, and *promotions*.

ACTIVITY 2

The Principles of Design

In Activity 1 you studied the elements of design (line, shape, space, form, texture, colour, pattern), which are the building blocks that can be combined in many different ways. The guidelines for combining these elements are called the principles of design.

Knowing and following the principles of design will help you with visual sensitivity and creative order, which are both very important in designing. The principles of design illustrate “how” the elements of design are used to create a desired effect.

The principles of design are as follows:

- balance
- unity
- contrast
- emphasis
- proportion
- movement
- rhythm

Balance

▼
balance: a principle of design that refers to equalization
▲

You can visualize **balance** as someone riding a bike or a gymnast on a balance beam. In both situations the body must be distributed evenly on each side of a centre line (or a line of symmetry) or it would fall.



Balance is also very important in design. In design, balance creates a sense of equilibrium of the objects.

Equilibrium can be achieved through three types of balance:

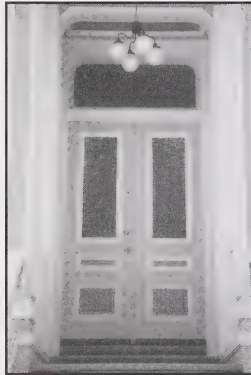
- symmetrical
- asymmetrical
- radial

Balance can be formal or symmetrical—what is on one side is repeated on the other side to create a sense of equilibrium. All the objects or shapes are arranged on an imaginary central line.

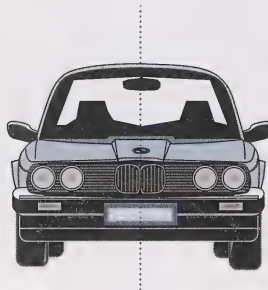
Try the following. Stand straight before a mirror with your arms at your sides. Imagine a line running down the centre of your body. Note that everything to the right of the line is basically the same as that on the left. This is one example of formal or **symmetrical balance**. Can you think of others?

▼
symmetrical balance: a type of balance where both sides are identical after a design is divided in half along a line of symmetry
▲

The photographs that follow are also examples of symmetrical balance. The features of the door and butterfly are (basically) identical from the centre outwards.



Symmetrical balance is good for solemn pictures. It is also important for diagrams that may have two identical sides.



Balance can also be asymmetrical, where the size or number of objects may vary on each side. Smaller objects may balance larger objects, but none of the objects will be positioned in the centre of the artwork. Asymmetrical objects or shapes cannot be divided into identical halves. Use **asymmetrical balance** to create lively pictures. Notice, in the following photo, how the cherry is balanced precariously in the spoon—it appears ready to fall!

▼
asymmetrical balance: a type of balance in a design where one side appears different from the other but is balanced with it
▲



▼
radial balance: balance where everything stems from a central point
▲

A third type of balance is **radial balance**. Radial balance shows objects radiating from a central point. Good examples of radial balance are the spokes of a bicycle radiating out to a round rim and tire from the central axle, the petals of a flower radiating from its centre, and the legs of a crab radiating from its body.



1. Identify the type of balance illustrated by each of the following.

a.



b.



c.



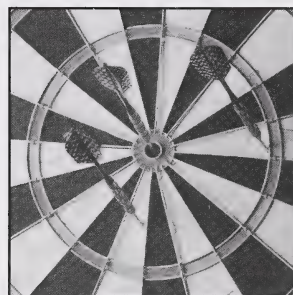
d.



e.



f.



Compare your responses with those in the Appendix, Section 2: Activity 2.

Balance and Text



font: an assortment of one typestyle in one size




Text on a page should always look balanced. It makes readability much easier. Balance and readability are often determined by the typestyle chosen. The typestyle chosen is referred to as the **font**. A font is an assortment of one typestyle in one size. There are many typestyle classifications. Some popular type classifications include the following:

- serif
- sans serif
- script

There are many other typestyle classifications.

Serif type has serifs or tails extending from the ends of the letters. Since this type is easily read in upper case and lower case, it is very prevalent.


ABCDEFGabcdegf  SERIF

Sans-serif type contains letters without serifs. This type gives a printed page a clean, sleek appearance. It is used to give a modern appearance to a printed piece. It is being used more and more.

ABCDEFGabcdegf

Script is very similar in appearance to a handwritten copy. The lower-case letters in script type connect to one another.

ABCDEFGabcdegf

- 
2. You may use the Internet to view various fonts. Use several search engines to explore terms like *fonts* and *typestyle* in your search. A word-processing program will also have a variety of fonts. Type a short message; repeat the message using different fonts. Which is easiest to read? Which is very difficult to read?

Compare your response with the one in the Appendix, Section 2: Activity 2.

Unity

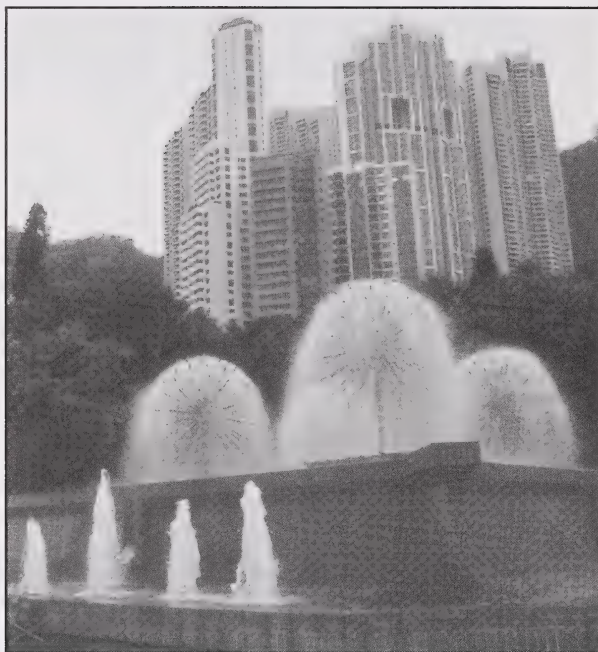
Have you participated in a team sport and heard your coach talk about team unity? Your coach realized that a group of people can produce better results if there is unity among the team members. If all members are working toward a common goal, great results can be expected.

When you wear blue jeans, a black T-shirt with deep blue text on it, and blue socks, you are creating a sense of **unity** or harmony in your attire. By repeating the colour blue you are uniting the total look of your outfit. The use of repetition can create unity in a design.

It is important to remember that too much repetition can become boring and monotonous. Varying lines, shapes, forms, textures, patterns, and colours helps to unify a composition but also adds variety and interest.

▼
unity: a principle of design that relates to a sense of wholeness, harmony, and consistency
▲

This photo of buildings in Hong Kong shows unity through the repetition in the shapes of windows and in the sizes and structures of the buildings. The fountains in the foreground help create variety and make the photo interesting.



3. Browse through some magazines and cut out pictures that you find interesting. Select the picture that you find the most interesting and glue it to a sheet of paper. Use this picture as the centre of interest and arrange other pictures or designs around it. Try to create unity, variety, and a type of balance with the central picture.

What design elements created unity? What design elements created variety?

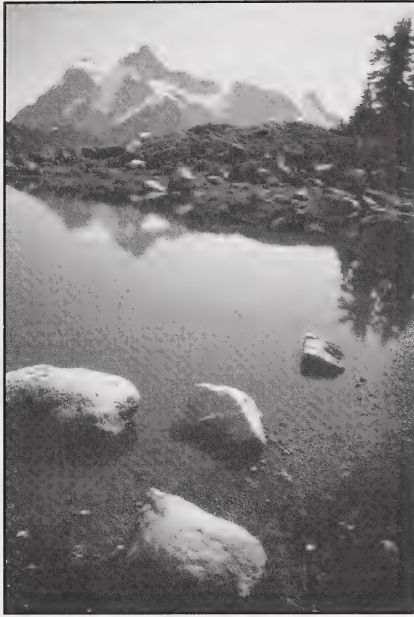
Compare your response with the one in the Appendix, Section 2: Activity 2.

Contrast

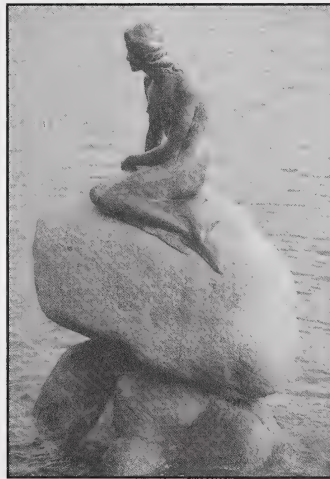
▼
contrast: a principle of design that refers to differences in line, shape, form, space, texture, pattern, and/or colour

Your life is filled with **contrasts** of all kinds. Nature is also full of contrasts—both extreme and subtle. For example, rough, jagged mountains contrast calm lake waters. Other examples of contrast include the following:

- light dark
- big small
- rough smooth
- cool warm
- stormy calm
- curved straight



Designers work with contrasting lines, shapes, textures, forms, space, patterns, and colour to make interesting pieces of work.



One of the simplest ways to illustrate contrast is through colour. Designs with complementary colours will show a lot of contrast. You will recall that complementary colours are those opposite each other on the colour wheel.

4. Suggest at least two ideas for a design using complementary colours for contrast. You may wish to create full-colour drawings of your ideas.

Compare your response with the one in the Appendix, Section 2: Activity 2.



Contrast can also be shown by using different values. Light, medium, and dark tones could create a design that shows contrast. The difference between the light and the dark tones would create the contrast. An object with one tone all over would look flat and dull.

5. Examine the three following diagrams.

Diagram A

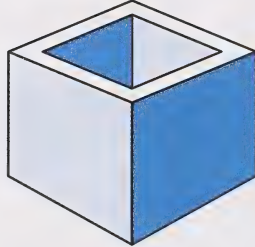


Diagram B

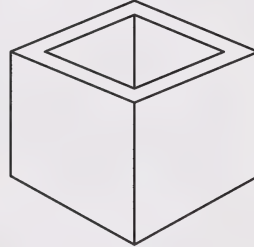
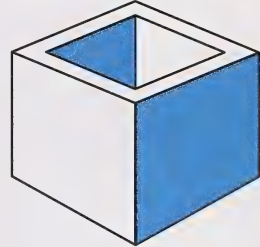


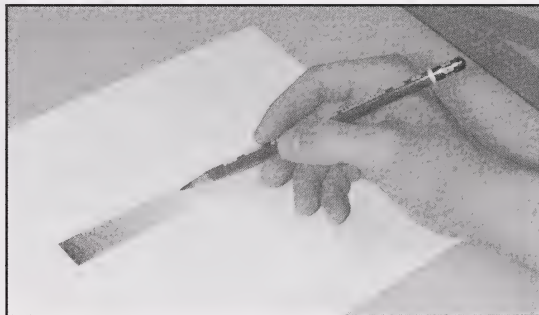
Diagram C



Decide which diagram best illustrates each of the following:

- an object with one tone all over and having no contrast
- an object showing contrast through the use of two contrasting tones
- an object showing a more natural look using a contrast of light, dark, and medium tones

Pencil shading is the easiest way to produce a contrast of tones on a drawing. By simply varying the pressure on the pencil, you can create a variety of contrasts. For a very light, almost white tone, use very little pressure. The darkest tones require the most pressure.



- Draw a rectangle measuring $12\text{ cm} \times 2\text{ cm}$ on a piece of paper and then divide the rectangle into six small squares, each $2\text{ cm} \times 2\text{ cm}$. Shade the square on the left end of the paper in the darkest tone, shade the square on the extreme right end the lightest. Now try to produce the mid-tones or shades between the two contrasting boxes.

Compare your responses with those in the Appendix, Section 2: Activity 2.

Emphasis

When you look at things around you, you will notice certain parts stand out, while others remain in the background. For example, bright colours seem to come toward you; dull colours seem to fade. Large forms are more noticeable than smaller forms. This diversity adds interest to your visual world. If there were no emphasis, the world would be boring since it would all seem the same.

▼
emphasis:
a principle of design that places importance, prominence, or attention on certain areas or objects
▲

You, as the designer, must identify, sort, evaluate, and decide how to use the elements of design to create **emphasis**. Emphasis creates a focal point. It can be created by grouping objects to create a focal point. Emphasis allows the eye to move through a design in an orderly way, from one point to another.

The subject of a drawing or photograph is often the focal point because it is the most important, the largest, or the predominant object in the picture. It is the point to which the eye is drawn.

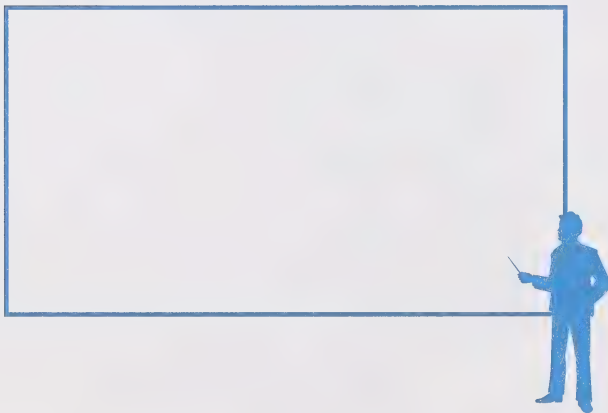
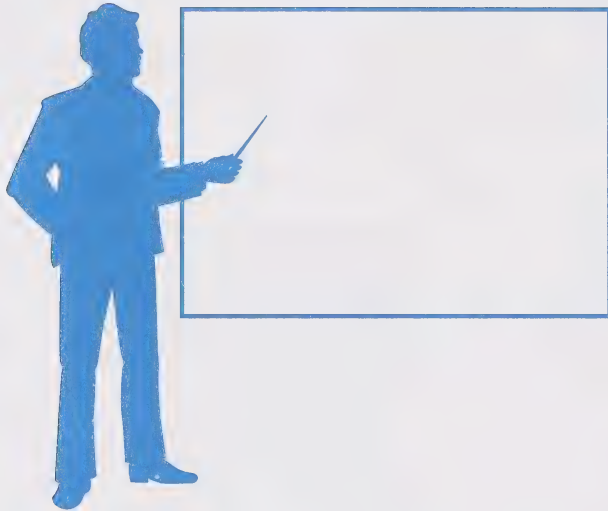
Look at the photograph of the pottery. Where are your eyes drawn?



Were your eyes drawn to the light-coloured pottery (with the fish motif) near the middle of this photo? This item illustrates emphasis since it is different from the others and stands out; it is the focal point of the photo.

Emphasis in photographs can be achieved by focusing on the background or the foreground. By blurring the background, objects in the foreground become more emphasized and vice versa. In sketches, the objects in the foreground could be very detailed and darkly shaded or coloured to achieve emphasis. The background could be lightly shaded and less detailed to emphasize the focal point in the foreground. The design of the background must keep the eyes focused on the main feature of the picture. An uncluttered background will achieve this principle of design effectively.

Unusual size can also illustrate emphasis. Look at the diagrams that follow to see how the feeling changes as the sizes and relationships change.



7. Define *emphasis*. Look in magazines to find examples of advertisements where designers emphasized their products by making them larger and more prominent than all other aspects in the advertisement.

Compare your responses with those in the Appendix, Section 2: Activity 2.

Proportion



proportion:

the principle of design that deals with the way the parts of a design are arranged in comparison to the whole



The scale of objects in relationship to each other or the whole is considered to be the design principle of **proportion**. To better understand proportion, visualize the relationship of the flowers, leaves, accessories, and container of a floral arrangement. Are all these components appropriate together? If so, they are in proper proportion.

Proportion gives a sense of balance in the overall picture. It is the relationship between the length, width, and height of an object. The method of dividing the surface area or the volume of an object can affect the proportions.

Many designers struggle with proportion to make their designs aesthetic or pleasing to look at.

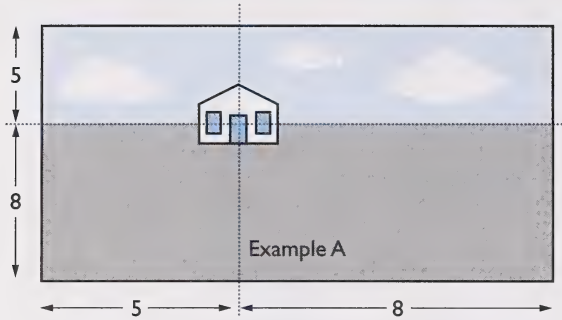
The Greeks believed they could make buildings that would be in perfect order and aesthetically pleasing by using geometry as part of the design and architecture. They believed that unequal parts were more interesting than equal ones. The golden section—also called the golden proportion, golden rectangle, or golden mean—involves a specific ratio of approximately 1.0:1.6 (and any multiples) in the construction of a rectangle.

The Greeks used the ratio of the golden section in the design of the Parthenon, a temple built for the goddess Athena around 440 B.C.

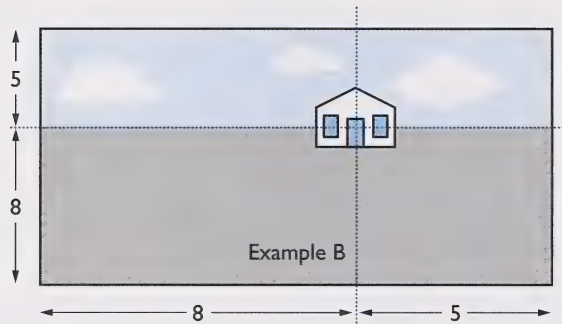


You can achieve designs that have a pleasing, informal balance by using the golden section.

The following examples show how the golden-section ratio (5:8) can be used to determine the position of the house as the centre of interest. (**Note:** The ratio 5:8 is a multiple of 1.0:1.6.)



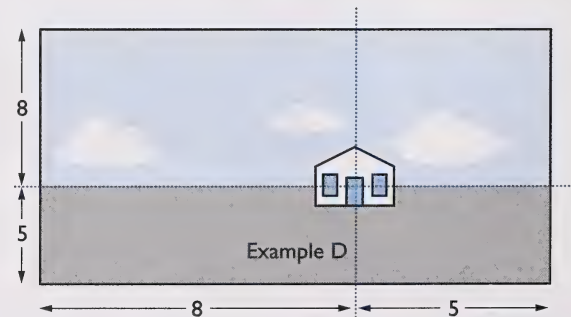
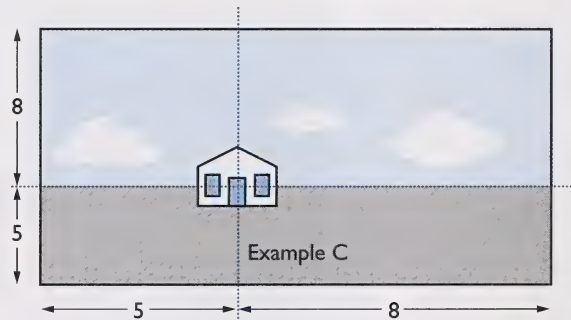
In Example A and Example B, the ground is emphasized and is the most noticeable because of the position of the house.



The clouds and sky are rather unimportant and the house—the centre of interest—seems far away. The expanse of ground emphasizes the distance to the house.

In Example C and Example D, the position of the house emphasizes the sky.

The clouds and sky become more noticeable and important. The house—the centre of interest—does not seem very far away.





In North American culture, people read from left to right and down the page, so the optical centre is towards the right, more or less in the position of the house shown in Example D. In Chinese and Japanese art, the optical centre tends to be in the upper left corner of a picture area—perhaps because their writing goes from right to left—and from the bottom of the page upwards. The house in Example A is more or less in the optical centre of Chinese or Japanese art.



Mathematics is important to designers, but rather than relying on numbers or rules, many successful designers use their eye to divide and proportion areas until the design looks right and achieves the desired effect.

8. Create two thumbnail sketches using the same centres of interest. Position the object in one sketch similar to Example A; position the object in the other sketch as in Example D. Determine which sketch you prefer and explain why.

Compare your responses with those in the Appendix, Section 2: Activity 2.

Movement

▼
movement: the principle of design that refers to the arrangement of parts in a design to create action or motion
▲

To lead the eye to various places in a design, the principle of **movement** must be used. Movement can be created by overlapping shapes, giving an area more detail, using lighter or darker colours, or drawing in more action in a particular area of the design. Using complementary colours or contrasting warm and cool colours also creates movement.

Lines can show movement. The thick line here shows movement to the right side of the page.



By making the line zigzag, you can slow down the movement. The line now has to work hard and takes a long time to reach the right side of the page.



By making the line curve, you will not slow it down as much as the zigzag. The curving line here reaches the right side of the page quickly.



Feelings of movement can also be achieved with vertical lines to suggest up and down and with diagonal lines to suggest movement along sloping lines.



Movement can be achieved by using value differences. Shapes can be painted from light to dark or from dark to light. The eye can be led in a front-to-back or back-to-front motion.



You can also show movement by the direction your subject is facing. In the diagram to the right, the top faces are looking to the right and the bottom faces are looking to the left.



9. Use one or more of the described techniques to create a design indicating motion.

Compare your response with the one in the Appendix, Section 2: Activity 2.

Rhythm



▼
rhythm: a principle of design that indicates a type of movement in a design

Rhythm is usually created by a repetition of one or more elements of design.

The repetition of one or more elements of design, such as shapes or patterns, can create **rhythm**. Rhythm can be created by the regularity or flow of ideas, images, and/or tones of colour. Some rhythms will flow smoothly; others will be rough or interrupted.

Designers can create rhythm with the sense of touch through sculpture and texture. They can create rhythm through the sense of sight with the use of curved shapes and lines.

The repetition of an element of design can create a feeling of rhythm in the following ways:

In the following line, a big upwards curve  and a little upwards curve  are repeated. When you repeat elements of design, like lines or shapes, over and over again, you can get rhythm.

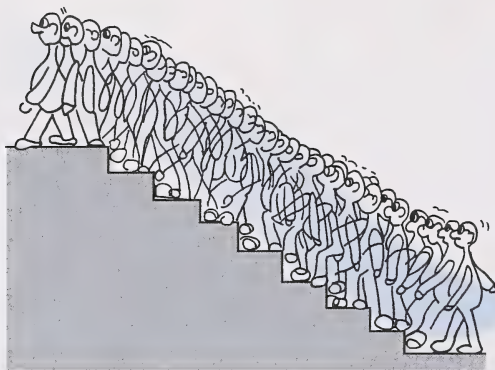


The words and numbers under the preceding line show its rhythm. To indicate greater speed, use short, sharp curves (and read the words and numbers fast); the line is like galloping horses.



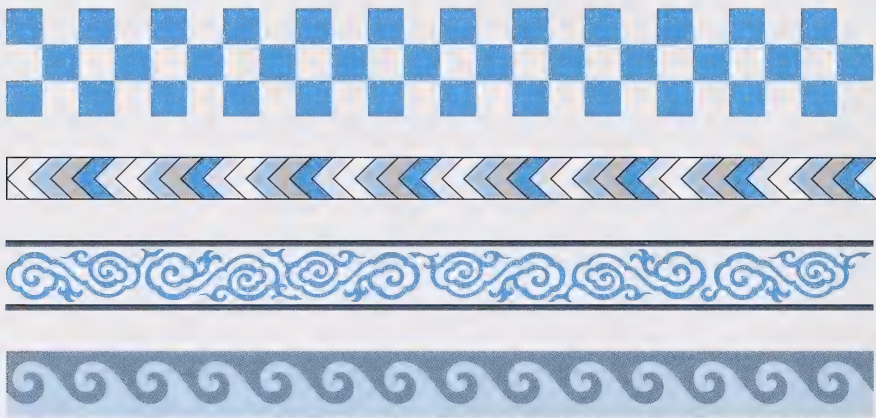
If you draw the line with long, gentle curves (and read the words slowly) the line is like lazy waves on a fine summer day; the line indicates slow movement.





This man looks like he is walking upstairs. His arms as well as his legs move, and they are drawn many, many times. This drawing has rhythm because the man is shown many times.

Repeating a shape to cover a surface with pattern produces rhythm.



10. Create a design showing rhythm by using a shape of your own choosing.

Compare your response with the one in the Appendix, Section 2: Activity 2.

Elements and Principles of Design Application

One way designers use the elements and principles of design is in designing business cards.

Business cards convey important information about you and/or your company quickly and in a format that you can easily carry with you. Because of the limited space available on a business card, it is important to be selective and precise when conveying an image and message.

Sing a Song Music, Inc.

451 Melody Lane
Edmonton, AB
T7N 5N5

Tel: (780) 555-8765

Fax: (780) 555-8777



Where service is our business!

Following are some recommendations for designing a business card:

- Decide on the type of message you would like to communicate. Try brainstorming several ideas and develop a few thumbnail sketches.
- Think about and develop a logo that represents you, your family, a friend, or a business. A **logo** is often a clever graphic conveying a visual message, like the following Coca-Cola logo.

▼
logo: an image
and/or graphic
used to
communicate
information
▲



1

A logo can be any of the following:

- letters combined to create a design or message
- symbols that relate to you or the company
- a complete picture that relates to you or the company's products
- an abstract object used to symbolize a concept

Logos should be simple in design, be eye-catching, be legible (easy to read), have retention value (be easily remembered), and have a relationship to the product or service of the business or to one's interests. A logo creates a more professional image, regardless of a company's size.

You may wish to view logos on the Internet. Use several search engines in your search.



- Information and design elements that should be on your business card include the following:
 - your name and/or the name of the business
 - a business logo or eye-catching design or photograph
 - an address and telephone number for the business (For a personal business card, you may wish to provide only a telephone number and/or a business address.)
 - a website address or e-mail address (Including a website address or e-mail address suggests to potential clients that you represent a company that is readily accessible from anywhere in the world and moving ahead technologically.)

Note: Business cards may be in forms other than paper stock. For example, many firms use CD business cards—these small discs usually have a cover that has the same information as the traditional cards. Further information on the firm, personnel, products, and other features is on the disc.

¹ "Coca-Cola," "Coke," and the Dynamic Ribbon Device are registered trademarks of The Coca-Cola Company.

Remember, your business card is a marketing tool. If it doesn't convey what you do in a way that interests or excites your prospective client, it will probably get thrown away. Your card must convey the benefits of doing business with the company or yourself. You can express this by using the elements and principles of design:



- Use lines to give the impression that you want to convey. Remember, lines can create shapes, emotions, and movement.
- Consider using positive and negative space on your card.
- Embossed paper, as well as sketching techniques, could be used to create textures.
- Consider the use of colour. Because of the high cost of adding several colours to business cards, coloured paper is usually used for one of the colours of the design.
- You can create balance in your card by manipulating size, shape, and/or colour. Place key words in a prominent position on the card. The size and style of font on your message should balance with your design. The font is usually kept 0.5 cm from the edge of the card. Use a maximum of three fonts. The choice of font is often a reflection of a company.
 - Established, traditional-type businesses (banks, funeral homes), governments, and professionals (lawyers, accountants, and medical personnel) will often use serif fonts.

N. O. Cavities, D.D.S.

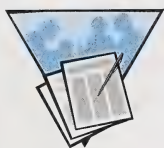
- New, highly competitive, and non-traditional-type businesses (realtors, car sales, computer firms, and travel consultants) often use sans-serif fonts.

J. "Joe" Williams, Car Sales

- Businesses involved in performing more personal services (photographers, florists, caterers, and wedding consultants) will often use script fonts as a reflection of their more personal business role.

M. Gardenia, Delightful Creations

- Consider pattern and space on the card. You can use simple thumbnail sketches, computer-generated graphics, photographs, or logos on the business card.



11. Collect business cards from various businesspeople and businesses and examine them from the following perspectives:

- elements of design used
- principles of design used
- the message conveyed
- the information included

If business cards are unavailable, look at the advertisements in the Yellow Pages of a phone book.

Compare your responses with those in the Appendix, Section 2: Activity 2.

Designers must incorporate the principles of design into their artwork to make it interesting and appealing. In this activity, you studied seven principles of design:

- balance
- unity
- contrast
- emphasis
- proportion
- movement
- rhythm



For additional information on the elements of design and the design principles, you may want to view the video *Visual Design: Elements and Principles*. It emphasizes and reinforces some of the elements of design (line, form, space, texture, and colour) and some of the principles of design (balance, unity, emphasis, proportion, and rhythm). These are explored using various media in black and white and colour. The development of a design using these elements and principles is also demonstrated.

If you have the opportunity, try to view the video entitled *Basic Drawing: Line, Light, Shade, and Texture* produced by McGraw Hill. This video provides additional information on most of the drawing techniques in this course.

Try to view the video *Technical Graphics*, produced by Classroom Video. In this video, the use of a grid and generating a grid are shown. Techniques for using shadows, colour, and tone are also demonstrated. This video also presents techniques useful for creating three-dimensional designs.

If possible, try to borrow the textbook *Design Graphics: Drawing and Presenting Your Design Ideas* by David Fair and Marilyn Kenny from your school library or school art department. This book has excellent examples of several of the elements and principles of design. Techniques and ideas for designs are clearly presented in black-and-white or colour drawings and may help you visualize the concepts in this section.

FOLLOW-UP ACTIVITIES

If you had difficulty completing the sectional activities, it is recommended that you do the Extra Help. If you did not experience difficulty, it is recommended that you do the Enrichment. You may do both.



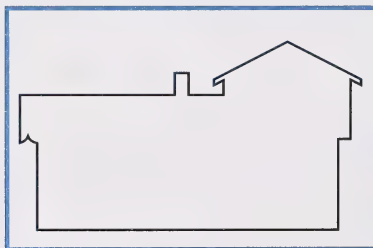
Extra Help

The seven elements of design used by designers to create their designs are

- line: Line is the distance between two points or the path of a moving point.
- shape: Shape is created when a line encloses space; it is two-dimensional.
- space: Space is the area surrounding a shape or form or the area taken up by a shape or form.
- form: Form is the shape or structure of an object; it is three-dimensional.
- texture: Texture describes the surface of an object.
- colour: Colour is used to create special effects of expression. It can give the feeling of warmth or cold and can make things appear close or far away. Colour is the one design element people seem to appreciate the most and the one to which people are the most sensitive. Each colour can be described in terms of three physical properties, which include the following:
 - hue: the colour's position in the spectrum
 - value: lightness or darkness of a colour
 - intensity: brightness or dullness of a colour
- pattern: Pattern is created through the repetition of lines or objects or any element of design.

These elements of design are the basic parts of any design. With them, you can create an endless number of possible combinations.

1. Trace or use an enlarged photocopy of the line drawing of the house. Complete the drawing by using all the elements of design; that is, your design should use line, shape, space, form, texture, pattern, and colour.



2. Refer to Activity 1 and complete a chart similar to the one that follows. Describe characteristics about each element of design. The first element has been done for you.

Element of Design	Element of Design Characteristics
line	Vertical lines suggest stability, dignity, and height. Horizontal lines suggest calmness, repose, and quietness. Diagonal lines suggest movement, action, tension, and drama. Zigzag and spiral lines show excitement. Lines can show movement. Lines can branch or spiral. Lines can create illusions. Lines can form concentric and parallel lines. Lines can create texture.
shape	
space	
form	
texture	
colour	
pattern	

Compare your responses with those in the Appendix, Section 2: Extra Help.

In Activity 2, you became familiar with the principles of design, which include the following:

- balance
- unity
- contrast
- emphasis
- proportion
- movement
- rhythm

The principles of design are the general guidelines for combining the various elements of design. You can visualize the elements of design, arrange them according to the principles of design, and arrive at your creative design products.



Balance is the principle of design that deals with equalization. It may help to think of balance as a result of cutting an object in half, dividing a pizza, or trying to equalize a seesaw. The line of division is used to identify the kind of balance.

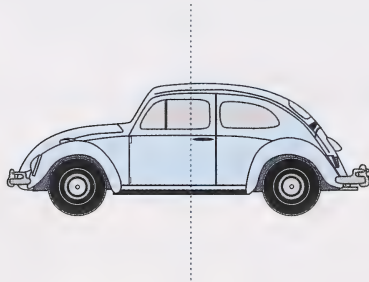


There are three kinds of balance; the line(s) of division identify the kind of balance.

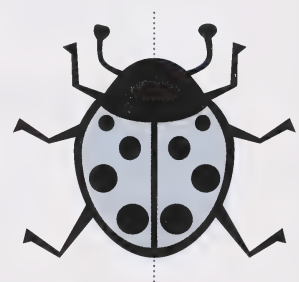
- symmetrical: A form on one side of an axis has the same form on the other side of the axis (shown in an equalized seesaw).
- asymmetrical: Forms on one side of an axis do not duplicate the forms on the other side (shown in the chopped carrot—the halves are not identical).
- radial: The form radiates in a balanced way from the centre (shown in the divided pizza).

3. Identify the type of balance in each of the following designs:

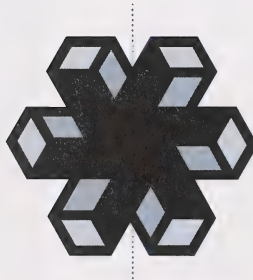
a.



b.



c.



d.

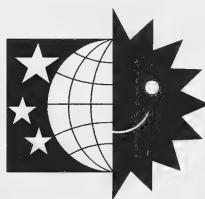


4. Following are statements regarding the principles of design. Pick an example from below that may best illustrate each statement.
- Unity results in a feeling of wholeness, harmony, and consistency.
 - Contrast is achieved by varying line, shape, form, space, texture, pattern, and/or colour.
 - Emphasis places importance on a design and can be achieved by opposing sizes, shapes, and colours.
 - Proportion in design is achieved by designers concentrating on arranging the parts of a design to aesthetically offset the whole.
 - Movement refers to arranging the parts in a design to create an action.
 - Rhythm indicates a type of movement in the design and can be achieved through repetition.
 - Balance deals with equalization; it may be symmetrical, asymmetrical, or radial.

Example 1



Example 2



Example 3



Example 4



Example 5



Example 6

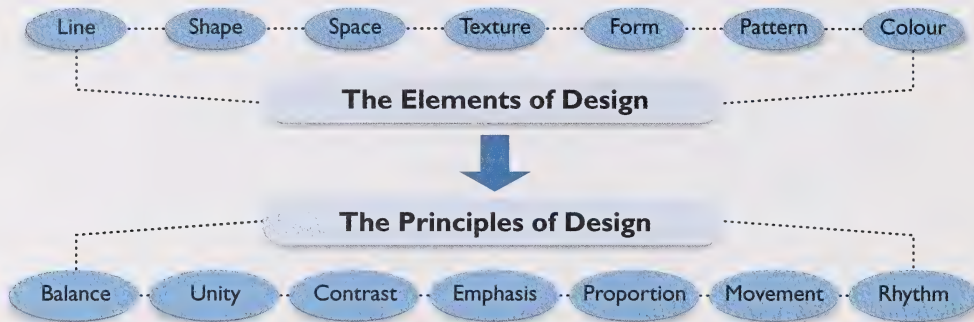


Example 7



Compare your responses with those in the Appendix, Section 2: Extra Help.

The elements and principles of design provide the guidelines for designers to create successful designs. Different combinations of elements and principles of design can produce different results or characteristics in the final design.



5. Locate the elements and principles of design in the following word search. Remember, there are seven elements of design and seven principles of design. After you have found all the words, write the leftover letters, beginning in the top left corner, in sequence. You will discover a hidden message.

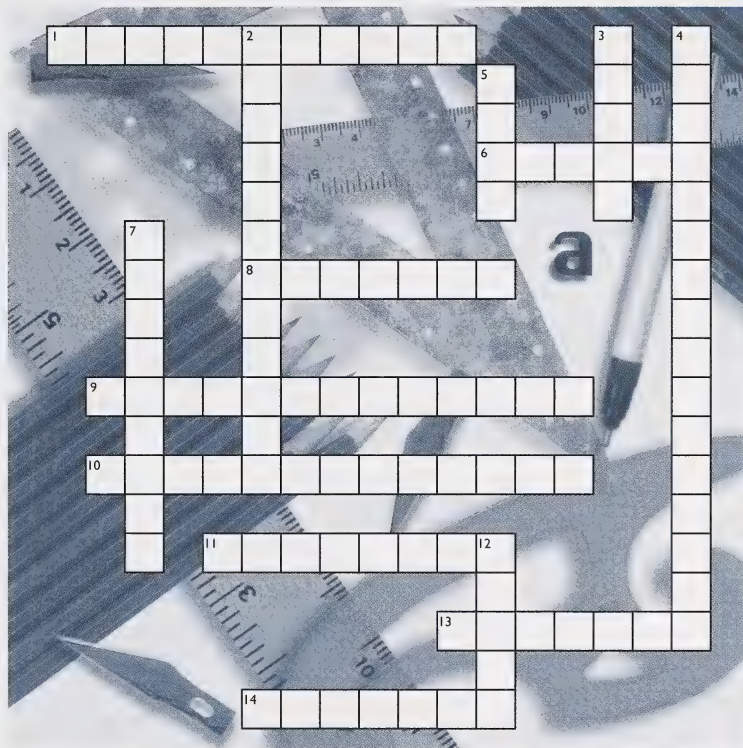
T	H	E	E	L	E	B	A	L	A	N	C	E	M
E	N	T	S	A	R	E	T	H	E	W	H	M	A
T	O	R	C	O	N	T	R	A	S	T	T	P	H
E	C	O	O	M	P	O	N	R	H	Y	T	H	M
E	N	T	L	S	M	O	F	T	T	H	E	A	D
E	P	R	O	P	O	R	T	I	O	N	S	S	I
G	A	N	U	T	V	H	N	E	E	P	R	I	I
N	T	C	R	I	E	U	P	L	X	E	S	S	S
O	T	F	L	D	M	E	S	I	G	T	N	A	P
R	E	E	T	I	E	R	H	E	H	O	U	W	A
O	R	R	P	L	N	A	O	C	E	M	E	R	C
N	N	T	O	F	T	E	T	F	S	H	A	P	E
H	E	S	E	C	O	M	P	O	N	E	N	T	S

Compare your responses with those in the Appendix, Section 2: Extra Help.



Do **one or more** of the following.

1. Use the given clues to complete the crossword puzzle.



Across

1. having a shape in front of another to create depth in a picture
6. a design principle that indicates a type of movement in a design
8. the element of design that refers to the feel of a surface
9. of one colour
10. colours that are opposite each other on the colour wheel
11. design principle that places importance, prominence, or attention on certain areas or objects
13. a series of repeated elements of design
14. a principle of design that refers to equalization

Down

2. balance where one side appears different from, but balances the other
3. principle of design relating to a sense of wholeness, harmony, and consistency
4. a designer's tools for expressing ideas visually
5. colours that seem to advance on a page and add warmth to a design
7. colours next to each other on the colour wheel
12. the element of design that is two-dimensional and encloses space

Task Management



2. Visuals (pictures, graphics, photographs, diagrams) have a silent language and everyone can derive their own message from them. The graphic artist may also have a message which he or she would like to communicate when designs are created. This is often the intrigue or mystery in pictures, posters, or other works of art, and why you may return to a gallery to view paintings or go to a store to buy the product or print.

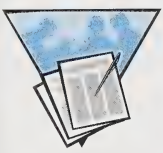
Following are two tasks given to you, the graphic artist. Each design must include the specified features, but extra objects could be added.

- a. A travel agent has asked you to create a design for the front page of a travel brochure that will be used to promote the different forms of travel (cruise ship, airplane, train, bus). Use the elements and principles of design in your creation of a front page for the brochure.
- b. A restaurant owner has asked you to create a poster that will be hung in the front entrance of the restaurant. This poster is to illustrate a variety of healthy foods the staff serves to its customers. Use the elements and principles of design in your creation of the poster.

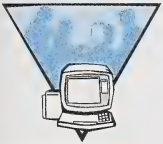


3. If you have access to the Internet, use various search engines to explore colour and its use in design. If you do not have access to the Internet, you can use your local library to do your research.





4. Visit a design or graphic artist to see how he or she uses the elements and principles of design in his or her work.



Write a report to summarize what you learned from your visit. Be brief, but accurate. Your report should faithfully give the entrepreneur's point of view and the ideas should be in your own words. Be sure to include all the important points.

Use a word-processing program if you have access to a computer.



5. A tessellation is an arrangement of shapes that completely covers a plane (a flat surface) without overlapping or leaving gaps. Islamic artists used them in much of their work. M.C. Escher, a Dutch artist, used his fascination with tile patterns he found in Spain to make tessellations of animals and humans. If you have access to the Internet, you may wish to view some tessellations.

Use several search engines to explore terms like *tessellation* and *Escher*. There are many books available on these topics; your local library may have some or may be able to access some.

Compare your responses with those in the Appendix, Section 2: Enrichment.

CONCLUSION

You should be able to recognize, understand, and identify the design elements that are the designer's fundamental tools for making statements in graphics. You should also be able to see, recognize, understand, and identify the principles of design. The principles of design are the general guidelines for combining the various elements of design.

Think about the last CD you looked at. Did you notice anything about the graphics or pictures used on the jacket insert? Were the graphics attractive or do you even remember what they were? If you don't remember the graphics, they must not have been very appealing and did not make an impression on you. First impressions are very powerful, and graphic designers work hard to create the best image by using the elements and principles of design.



Just as Jay used the elements and principles of design to create an attractive CD jacket insert, you, the designer, must use them well. The elements of design are the basic parts of any design. With them, you can create an endless number of possible combinations. The elements are the “what” or the components of the design. The principles are the “how” or the placement of the components of the design. Good luck with using the elements and principles of design when creating any type of visual or graphic in your field of design. You should visualize the elements of design, arrange them according to the principles of design, and arrive at your creative design product.

ASSIGNMENT

Turn to Assignment Booklet A and do the assignment for Section 2.



Skills Development



E_{NZA} feels she can create new design ideas if she is organized, develops a plan, and looks for ideas from other sources, friends, and her mentor. Enza hopes for a career in the design industry, so she wants to learn the methods and techniques used by the professionals.

Designers use a method or process when they build or create things. This process acts as a guide to help them complete their projects. The designers have also developed skills and techniques to make the process easier. Special tools and computer programs help the designers achieve the professional look of their work.

In this section, you will explore media and techniques used by designers. The design process will be introduced or reviewed, depending if you have completed any introductory courses in design studies. You will be given suggestions for completing two-dimensional design applications.

ACTIVITY 1

Media Used by Designers

▼
media: materials and tools that a designer chooses to help create a design

Medium is the singular form of media.



The wide range of materials and tools used by designers is called the **media**. When different materials are combined to produce a piece of artwork, the artwork is an example of mixed media. For example, you might apply pencil over water colours or attach fabric to a paper sculpture.

Every medium has its own special qualities. As the designer, you must always think about the media in which you are working. It is important to choose appropriate tools and materials for specific design work. This will produce the best results. For example, if you were a furniture designer, you could combine metal, fabric, and wood to make a chair.

1. Develop a list of materials that can be used to create designs.

Compare your response with the one in the Appendix, Section 3: Activity 1.

For this course, as well as other courses in Design Studies, you may find the following media necessary for creating the look you desire in your designs:

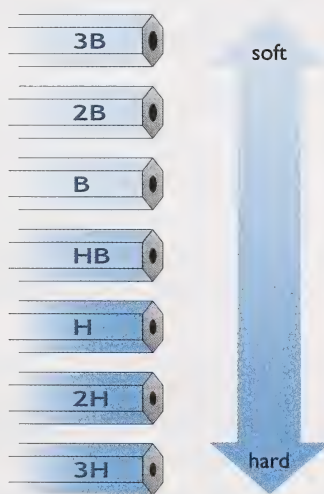
- pencils
- technical pens
- fine-line markers
- felt pens
- studio markers
- coloured pencils (pencil crayons)
- paints
- brushes
- inks
- paper
- computers



Pencils



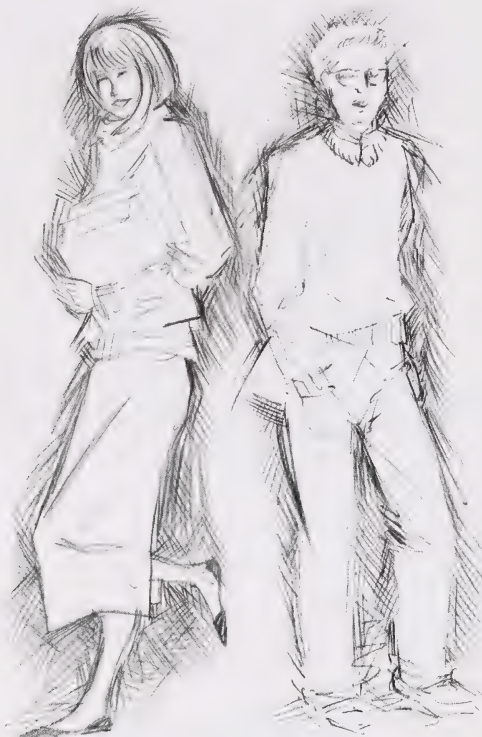
Pencils are graded according to the hardness or softness of the lead they contain. A soft pencil is graded as a “B” and will give a blacker line than a hard pencil, which is graded with an “H”. An “HB” label means the lead is of medium hardness—neither soft nor hard. The numbers 2, 3, 4, 6, and so on indicate the degree of hardness or softness. For example, a 6H pencil is harder than a 2H or 4H pencil; a 6B pencil is softer than a 2B or 4B pencil.



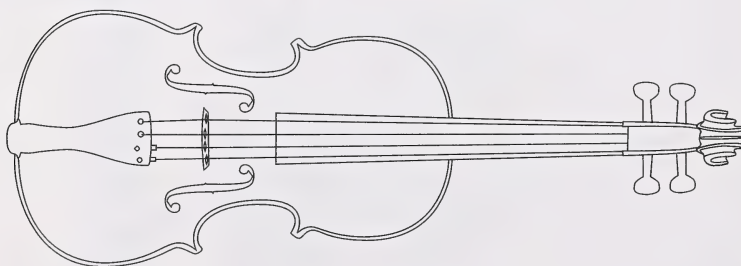
Softer pencils do not need much pressure to make a line, so they are good for making quick design sketches. A soft pencil tends to lose its point quicker than a hard pencil. A hard pencil gives a more even line thickness and can produce sharp, fine lines. A hard pencil is ideal for accurate drawings, particularly where precise measurements are needed.

2. Decide which type of pencil would create the best results in each of the following sketches.

a.



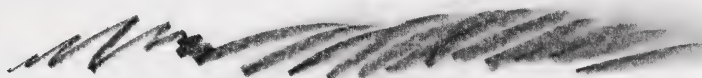
b.



3. Make a thumbnail sketch with a soft-leaded pencil and then do a second sketch with a hard-leaded pencil. With which type of pencil did you prefer working? Why?

Compare your responses with those in the Appendix, Section 3: Activity 1.

Soft pencil marks can be blended to shade an object. To blend soft pencil marks, hold the pencil on its side and make wide, sweeping lines. Then use tissue paper or your finger to blend the lines.



▼
fixative: a
material used to
prevent smearing

To keep the drawing from smudging further, you can use hairspray or a purchased **fixative**. The fixative will serve as a seal and protect your drawing. You can purchase fixatives in an aerosol can or in a bottle with a spray diffuser.

▲
Avoid inhaling the fixative spray; it may be harmful. To use the fixative, hold the can about 30 cm from the material to be sprayed.

Safety



Technical Pens

Technical pens can be used to make drawings that are accurate and precise. These pens produce bold and clean lines that have a constant thickness, making the work done with them suitable for photocopying.

Technical pens come with different nib sizes, ranging from less than 0.1 mm to over 2.0 mm. These pens are available as individual pens or as sets consisting of one holder and several interchangeable nibs.

For good results, these pens should be held at a 90° angle to the paper (upright). Holding the pen upright assists the flow of ink to the nib. When not being used, technical pens should be capped so the ink does not dry and the tips remain protected. Technical pens should be stored with the pointed-end elevated.



Technical pens are essential for accurate artwork and detail. Using technical pens for precise drawings gives the work a professional look. Technical pens have removable nibs so that a variety of point sizes can be bought.



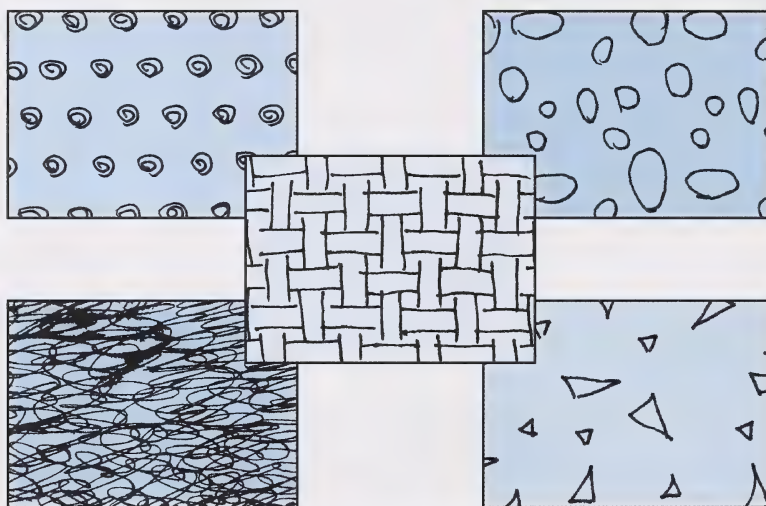
Fine-line Markers



Fine-line markers have fine or extra-fine tips. They come in a few basic colours. They can be used like pencils to produce quick design sketches. They are popular because they make thin, bold lines like technical pens. Some common uses for fine-line markers include the following:

- precise drawings
- sectional views
- applied textures

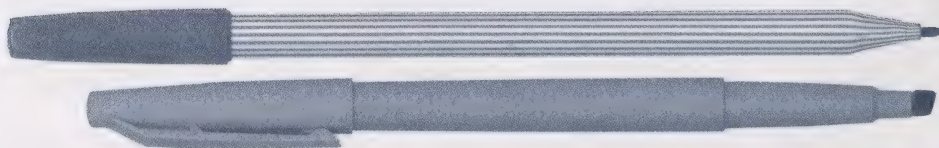
You can use fine-line markers to put texture effects in your designs. Following are some examples. These simulated textures look smooth or rough, even though they are all drawn on flat paper and are perfectly smooth.



You can also use fine-line markers to line-in precise drawings, for crosshatching to add texture to a drawn object, or for lettering diagrams.

Felt Pens

Felt pens are used to add colour and present an idea of how the completed product will look. They are available in a variety of colours.



By changing the pressure and direction (angle) of the pens, a great many different kinds of lines and details can be made. See the following examples.



Felt pens have the following two disadvantages:

- They tend to dry up quickly. As a result of drying, the colour the pen produces is generally lighter than the colour you expect.
- The felt or fibre tips tend to lose their shapes. Felt pens are a poor choice for making precise drawings because the tips lose their shape quickly.

Studio Markers

Designers use studio markers as one of their basic tools for drawing designs. They are used to quickly add colour and interest to more developed drawings. With care, they can be used to produce drawings that give a clear representation of what a finished design will look like.



Felt pens are available in a wide variety of nib sizes and styles. Some include:

- fine tip
- rounded tip
- broad tip
- flat tip

Studio markers are available in a variety of colours and shades. If you plan to purchase studio pens from an art store, you may want to select several shades of the same colour instead of a variety of colours. This will allow you to create a consistent effect of light and shade on an object, without having to control the pressure on the studio marker.

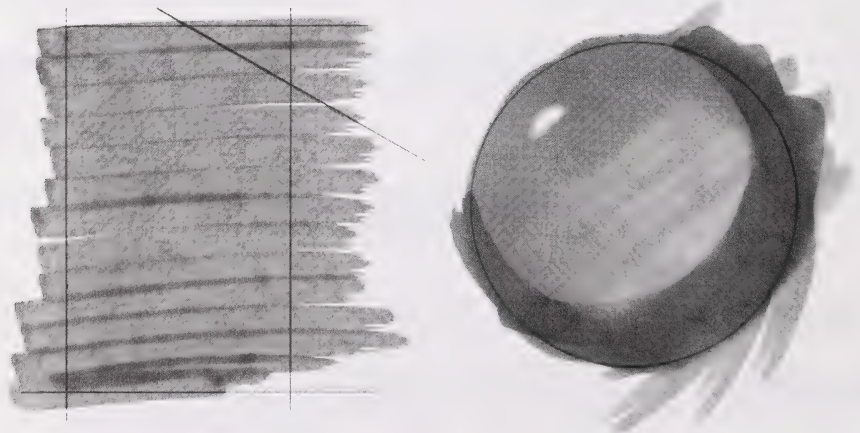
4. Determine the medium each of the following statements describes.
- This medium tends to dry up quickly and the fibre tip loses its shape.
 - This medium is used to produce bold and clean lines in an accurate and precise drawing.
 - This medium is used by designers to quickly add colour and interest to developed drawings.
 - This medium produces thin, bold lines and can be used like a pencil to make quick design sketches.

Compare your responses with those in the Appendix, Section 3: Activity 1.

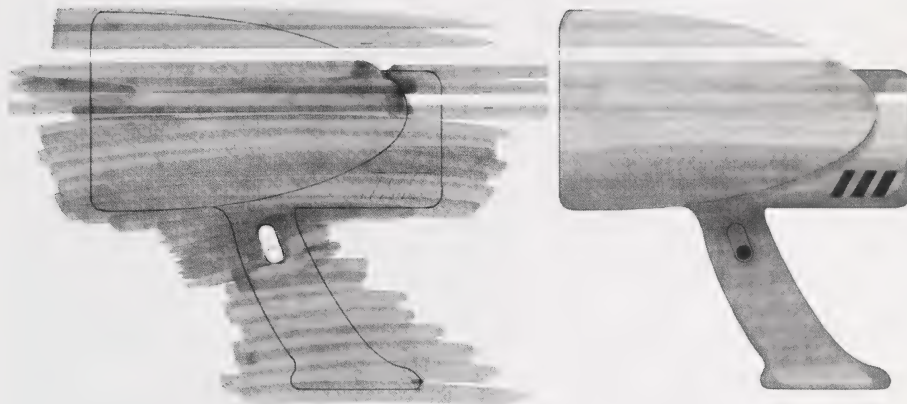
Using Markers

When using markers (fine-line, felt-pen, or studio) to fill in the main colour on a drawing, you should use an even pressure and parallel strokes. The direction of the marker strokes can be used to show the form of an object; this can be done by following the contours of the object.

The best result with markers is achieved if you cut out the object and glue it to a background. This allows you to colour smoothly over the edges rather than stopping abruptly at the edge. When you stop colouring abruptly with a felt pen, there is a tendency to apply slightly more pressure and cause more ink to be released. This gives a heavy outline in an area that you may not want to highlight.



For the best results, start colouring your project with the lightest colours first. Lighter colours will not cover darker colours successfully so it is important to work from light to dark. To make an area darker, apply extra coats of the same colour or use a darker shade of the same colour.



Always remember to allow your project a few minutes to dry before applying more colour. Felt pens contain a fast-drying ink, but waiting a few minutes before applying extra details can prevent smudging or blending of colours in areas you do not want this effect.

Add highlights to your design by leaving white spaces or drawing in lines with a white coloured pencil or paint. Details and shadows can be created with a black coloured pencil or fine-line marker.

Examine the following diagram carefully to see how the various elements are created.



Coloured Pencils (Pencil Crayons)

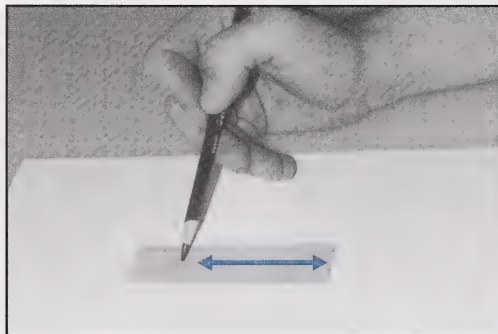
Designers find coloured pencils to be a valuable medium for colouring design drawings. They have the following advantages:

- Instant colour can be added to design sketches and drawings.
- They are quick to use.
- They are easy to control.
- They are inexpensive.
- They involve no mess.



When you use coloured pencils you can give your work a professional look by using the following suggestions:

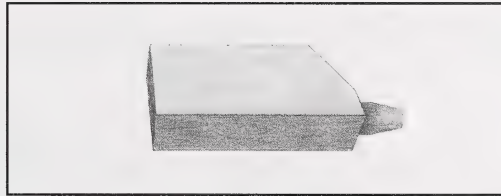
- Keep the coloured pencils sharp.
- Keep an even pressure when colouring.
- When filling in colour, follow the shape of the object. Do not change directions with the coloured pencil unless the contour of the shape changes.



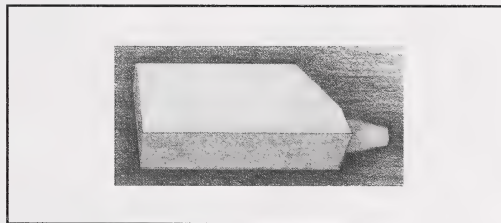
- Colour to the edge of the object. You can soften the look at the edge by using your finger or a tissue to smudge the colour towards the centre of the object.



- A little colour can be more effective than lots of colour, so colour lightly and sparingly at first.



- Increase the pressure on the pencil to create darker tones.
- Finish your drawing by outlining the object—colour a small area around the object using a darker shade than the coloured object.



You can also create blends of colours by using coloured pencils. This is achieved by carefully applying a darker colour over a lighter colour.

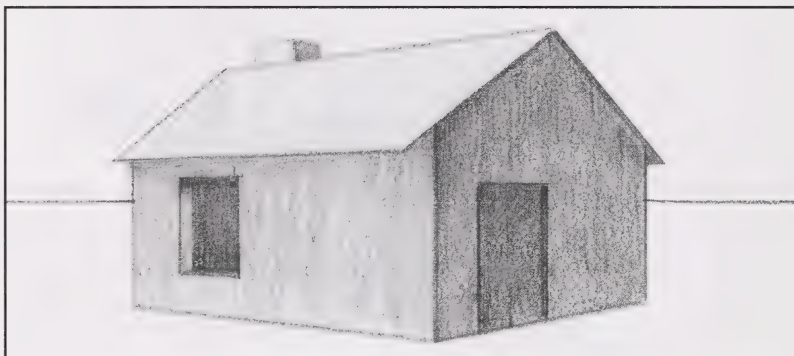


5. Practise using coloured pencils. Draw a long, narrow rectangle. Using only the primary colours (red, blue, yellow), attempt to create all the colours of a rainbow. **Hint:** Start the exercise by colouring lightly on the left-hand side of the rectangle with blue mixed with red; graduate to a portion of only blue. Put yellow in the middle of the shape and red on the right-hand side. Gradually darken the end and middle colours; then blend yellow with blue on the left and with red on the right.

Compare your response with the one in the Appendix, Section 3: Activity 1.

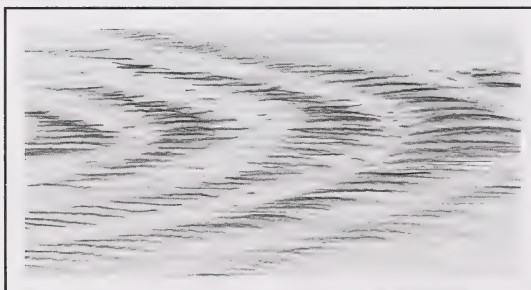
Coloured pencils can create different effects:

- They can be used to help describe the form of an object. Colours and hues are used in relation to source of light—the side of an object that light shines on will be the lightest, brightest area; the side(s) in shadow will be darker. If a coloured area is in shadow, it is usually coloured in darker tones of the same colour. Shadows on white are usually coloured grey.



▼
render: represent or give information in a visual way
▲

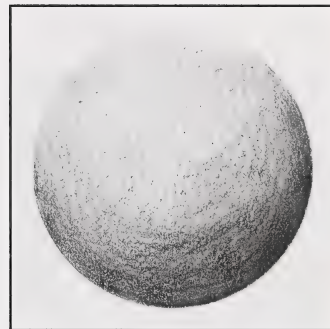
- They can **render** an object to show the material(s) from which the object is made. Use lighter colours to fill in the object. Use a darker pencil of the same hue (or use a different hue, if applicable) to render the material details, such as wood grains, spiralled fibres, or pitted bricks.



- They can be used to render curves, as in spherical or cylindrical objects.

Varying the pressure of the coloured pencil to create light and dark areas creates shadows that give the illusion of curves in objects like the following:

- spheres
- folded ribbons and flags
- lettering
- bottles and round canisters
- cups and bowls



6. a. Draw three thumbnail sketches of an apple. Use a felt pen on one drawing, a coloured pencil on the other, and then a combination of the two on the third drawing.
- b. Which effect did you prefer? Why?

Compare your responses with those in the Appendix, Section 3: Activity 1.

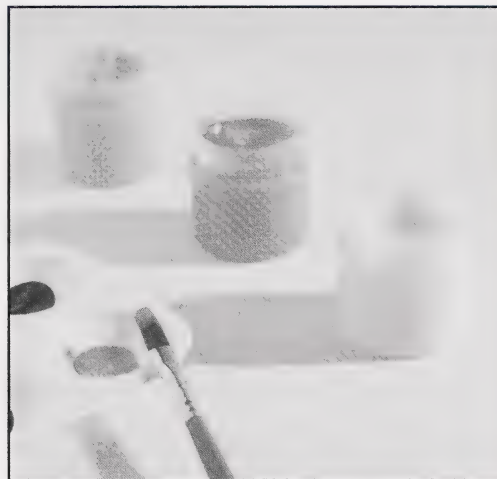
Paints

There are three types of paints commonly used for design work:

- acrylic
- tempera
- water colour

Oil paints are not used frequently by designers for the following reasons:

- They are difficult to clean up.
- They take a long time to dry.
- They produce a heavier look than the other types of paint.



Oil paints are used by artists specializing in certain types of work.

When buying paint, always buy the three primary colours—red, yellow, and blue. Also buy some white to mix tints, which are lighter versions of the colours, and a small amount of black to mix shades, which are darker versions of colours. The secondary colours—green, purple, and orange—can be mixed from the primary colours.

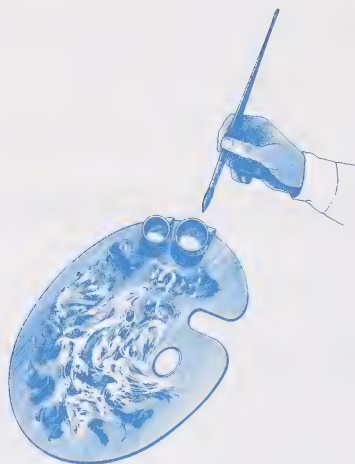


Acrylic Paint

Since acrylic paint is really a liquid plastic, it dries quickly. It can be cleaned and thinned with water. It can be bought in premixed jars or tubes. Sometimes, an extender is used to make the paint go farther and to slow down the drying time (if more time is needed to work on a painting). An extender is also useful because it adds texture. Don't let acrylic paint dry on a brush. Brushes must be cleaned immediately after use.

▼
palette: a flat, shaped board that holds paint and serves as a mixing surface
▲

Notice the picture of a **palette** that follows. Paints (in particular, acrylic and oil paints) are often mixed on the surface of a palette. Notice the hole where the thumb fits when the palette is held.



Other containers, like an aluminum pie plate or a styrofoam meat tray, work very well for mixing acrylic and water-colour washes. (If acrylic paint is diluted with water, washes of colours can be used in the same way as water colours.)

Tempera Paint

Tempera paint, or poster paint, is sold in most department stores, educational-supplies stores, and art stores. It comes in three forms:

- powder
- premixed liquid
- cake

Powder form is the least expensive, but it is unpopular due to the dust it creates when water is added. If you are asthmatic, you may want to use the premixed liquid or cake form rather than the powder.

Since tempera paint is water-soluble, it can be thinned or kept thick. It is opaque; you can't see through it to the page underneath. Colours go over each other well. Tempera paint dries quickly. When using tempera paint, white areas can be painted with white paint.



Water-colour Paint

Water-colour paint is sold in three forms:

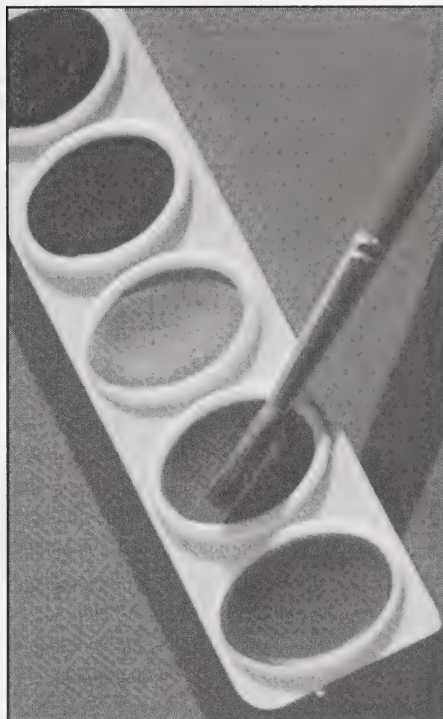
- tube
- cake
- pencil

A tube of water-colour paint lasts a long time because only dabs of it are used. A water-colour palette box is used for mixing dabs of water-colour paint with water.

Water-colour paint is transparent. You can see the paper through the washes in water colour.

If a lighter colour is needed in water colour, just add more water. If a darker colour is needed, use less water or apply more than one wash on top of another.

When using water colours, the very last colours brushed on are dark ones. You cannot go over a dark colour after it is dry to make it lighter.



7. Practise working with your paints. You may wish to include some samples in your portfolio.

Compare your response with the one in the Appendix, Section 3: Activity 1.

Brushes

Some designers use paint to highlight their work. The brush used depends on the paint being used and the desired effect. Brushes with fine bristles produce fine lines and details. Thicker brushes are suitable for filling in colour and background.

What would you do with old paint brushes that have lost some of their bristles? Throw them out? Think twice before throwing them out. Even though they have lost some of their bristles, these brushes are perfect for producing thin lines.

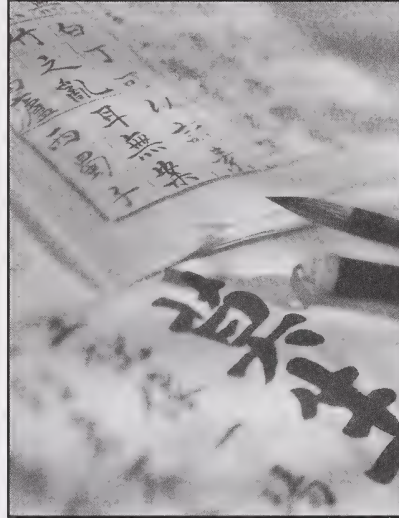


Inks

There are two types of inks:

- spirit-based
- water-based

Spirit-based inks bleed or soak through ordinary paper. When using spirit-based inks, it is advisable to use a paper that has a coating on the back to prevent the ink from soaking through. These inks lend themselves better to line drawings.



Water-based inks do not soak through paper. These inks are generally transparent and colours can be applied over one another to create a range of tones and colours.

Water-based inks can be used in a way similar to water-colour paints. Because brushstrokes do tend to show up, it is a good idea to work quickly with these inks.



If you are unsure if the ink you are using will bleed through the paper or not, place some scrap paper beneath your work.

Paper

Most designers use some kind of paper in their work. There are many kinds of paper, ranging from inexpensive paper (like newsprint) to expensive paper (like that made from linen rags). Some papers have a soft, textured surface, and others have a hard, smooth texture.

You can draw and/or paint on paper. You can use specially prepared paper for drafting blueprints and plans for projects you will be making. You can make interesting designs using paper. Paper can be scored, cut, curled, layered, fringed, slotted, torn, woven, rolled, crushed, and folded.



8. Create a small design on three types of paper, for example, writing or computer paper, a heavier water-colour-paint paper, and a type of textured paper. Compare the results. Do you have a preference?

Compare your response with the one in the Appendix, Section 3: Activity 1.

Computers

Today many professional designers are using computers to assist with the development of their designs.



Using a computer does not necessarily save time for the designer; however, computers do allow the designer great flexibility. A designer can quickly change or make copies of his or her designs.

Computer-generated designs can be accessed through original graphics files, through software packages that contain clip art, or from the Internet. These designs can be altered by adding or removing parts or by rotating them to give a view from several angles. They can be manipulated in many other ways.

Computers also assist designers with some of the design principles or mechanics of the design. Depending on the computer software being used, two-dimensional and three-dimensional images can be created. Proportion and colour separations for printing companies can also be determined by the computer. Text, photos, and graphics can all be quickly added, resized, or repositioned with the computer. The computer also allows the designer to add special effects with photographs or colour gradients.

▼
scanning: using a scanner that interprets and reproduces an image using a moving beam of light
▲

Many graphic artists rely on **scanning** photos, illustrations, or designs into the computer. Once an object has been scanned, it can be changed to suit the need of the project. A solid-coloured object can be scanned and then the computer can be used to adjust the tones, shading, and contrasts to give the design a completely different look. Colour filling is quickly achieved through the use of a computer.



Designers specializing in illustrations or industrial design may use computer drawpads to input their designs into the computer.

Various software packages allow artwork to be animated. The field of animation and design for the Internet is a rapid-growing industry.

Perhaps the greatest advantage of using the computer is the computer's ability to store and retrieve designs quickly. You can store and save thousands of design ideas on a disk or compact disc instead of storing the designs on paper that takes up a lot of space and is easily damaged.

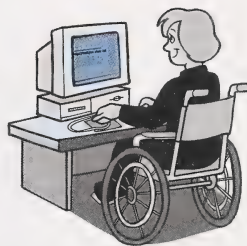
Artwork produced by programs on the computer can achieve a very high standard; however, it is still the designer with specialized skills who will produce the best creative results. The computer should be regarded as one of the tools available to design artists.



If you have access to the Internet, use search terms such as *computer design*, *multimedia design*, *web design*, or *graphics* to view samples of computer artwork.



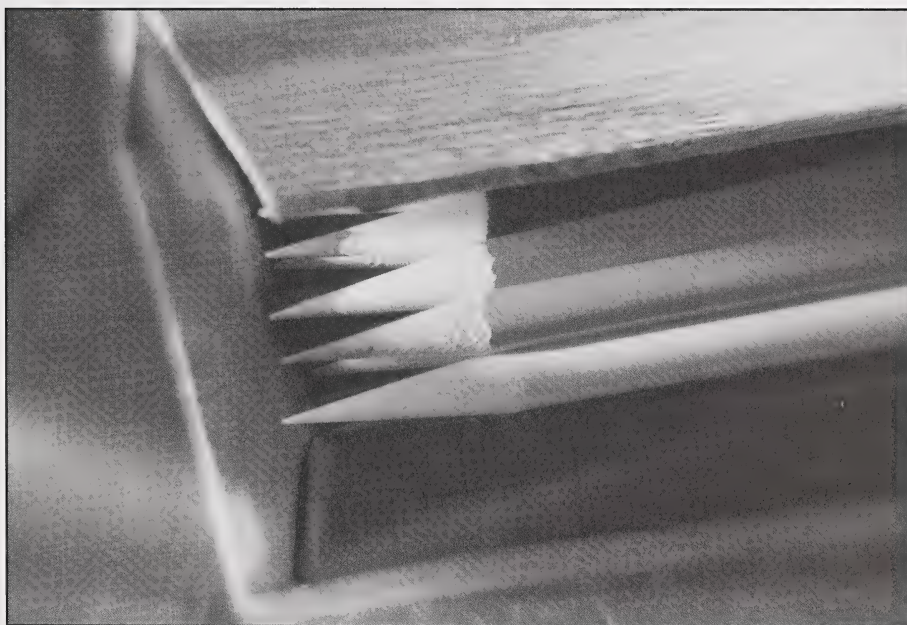
9. If you have access to a computer with drawing or graphic applications, practise using these programs to create designs. If you are using graphic applications, print a copy of the original computer-generated design. Then use the computer to alter the look of your design by changing the size or the positioning, by adding extra shapes or deleting shapes, and/or by changing the colours or shades.



Compare your response with the one in the Appendix, Section 3: Activity 1.

The most common media used by designers are as follows:

- pencils
- technical pens
- fine-line markers
- felt pens
- studio markers
- coloured pencils
- paints
- brushes
- inks
- paper
- computers

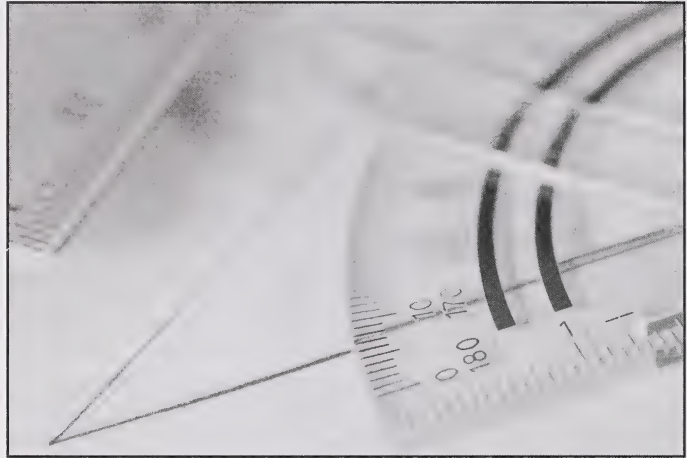


ACTIVITY 2

Techniques of the Design Trade

▼
techniques:
*particular ways
of using media to
achieve certain
results*
▲

Many of the **techniques** used by designers involve concepts from science and mathematics. For example, the use of geometric applications in organizing visual space and the principles of balance and proportion are developed through the use of mathematical information.



The scientific principles used in designing deal mainly with knowing the characteristics and qualities of the materials with which you will be working and how they respond under different circumstances. For example, when working with a water colour, the colour and water are absorbed differently on different weights of paper. When mixing powder paint with water, the paint has a completely different texture than when mixing it with egg yolks—as was done in early art history—or when mixing it with white glue. The paint mixed with egg yolk will crack, whereas the paint mixed with white glue responds more like acrylic paints.

Each material takes on different characteristics when used in different combinations. This is why designing can be so fascinating and intriguing. There is always the opportunity to discover a new technique or a new way to use materials. You could be the individual who makes that discovery. Have fun experimenting with a variety of techniques and materials when you design your projects.

Designing Techniques Using Mathematics

Several mathematical principles were used to develop and describe some of the principles of design in Section 2. To review these principles and to identify them as designing techniques, consider the following information.

The Off-Centre Rule

Designing and drawing objects off-centre uses asymmetrical balance. It is more interesting to the eye than designing things to fall in the centre of the picture.

With this type of balance, unequal elements of design are organized to achieve a visual balance. Imagine children of various sizes (two “unequal” people) on a seesaw, seated at different locations to create balance.



CORBIS/DEAN CONGER

This type of balance is perceived to be more active, exciting, vigorous, and informal than symmetrical balance. (You studied symmetrical and asymmetrical balance in Section 2. You may wish to review the material on symmetry.)

Asymmetrical balance can be achieved by using the 3/5 or 2/3 rule.



3/5 Rule



2/3 Rule

These rules offer unlimited design possibilities and combinations. Since there is no centre line—real or imaginary—one side of the design is different from the other side. Look around you to see how artists and designers have used the off-centre rule to achieve asymmetrical balance.

1. Draw a centre line or an axis of symmetry on a piece of paper, and draw each of the following objects to show symmetrical balance. Then, draw each to show asymmetrical balance. Which drawings seem more active, exciting, and vigorous?



Compare your responses with those in the Appendix, Section 3: Activity 2.

The Flow of a Triangle

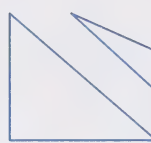
Items designed to take on the shape and flow of a triangle can be visually pleasing. The types of triangles used include the following.



equilateral



isosceles



right



obtuse



scalene

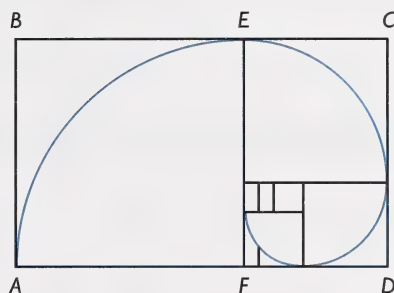
The Japanese use the triangle as a design style in flower arranging and bonsai (the artful dwarfing of potted trees and shrubs). In the following diagram, notice how the branches of a bonsai tree are pruned to fit into a triangle.



The Golden Section

You studied the golden section in Section 2. The golden section allows you to group objects visually in order to obtain designs that are interesting to the eye. The golden section divides objects in the approximate ratios of 3:5 or 8:5 or any multiples of these numbers and is considered to be the most aesthetically pleasing proportion.

Look at the following diagram. Rectangle $ABCD$ is a golden rectangle. If a square $ABEF$ is removed, the remaining rectangle $ECDF$ is also a golden rectangle.



If this process is continued and circular arcs are drawn in the squares (as shown in the diagram), the curve formed approximates a spiral and a form that is found in nature in items such as a seashell, a pine cone, a pineapple, and a sunflower.



2. Find an item in nature (a seashell, pine cone, pineapple, or sunflower) and examine it carefully to see the spiral. Draw a representation of this spiral. In what proportions is your drawing?

Compare your responses with those in the Appendix, Section 3: Activity 2.

Using Guide Lines

Most designs begin with a pencil sketch. If you are working on a complex design, you may wish to create guide lines to keep your project in proportion and on a straight line. These guide lines should be produced with very little pressure on the pencil to keep the lines faint. See the following example.

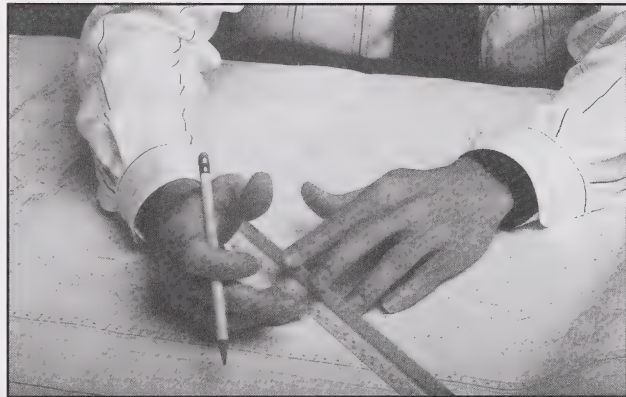


3. Use guide lines to develop a design using your name.

Compare your response with the one in the Appendix, Section 3: Activity 2.

Drawing to Scale Using a Grid

Drawing to scale is another mathematical principle used by designers.

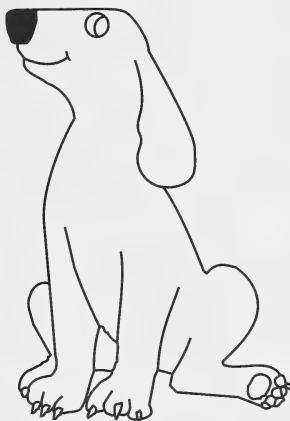


You can create plans that show information about area, positions, and measurements. When developing plans, it is important to keep the measurements accurate. If you are drawing the object at its actual size, the scale is considered to be 1:1. Plans of homes or communities are reduced in size and must be scaled down to fit on the paper. Designers must use an appropriate scale to give an exact example of the project. The scales used should appear on all plans.

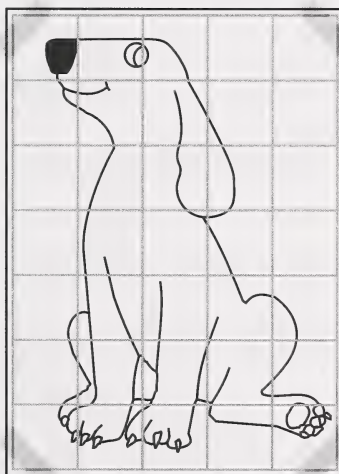
Some designers use grids as an aid in drawing objects. By using a grid, you can mark off the scale of an object and plot connecting points. The grid also helps you secure good proportion and it serves as a guide in drawing objects. The squares on the grid can be used to represent certain sizes. By counting either horizontally or vertically, you can draw the correct shape of the object.

Grids can also be useful for enlarging or reducing a design. For example, designers develop a grid to enlarge their drawings into wall murals. The selection of the size of square depends on how large or small you want to make your drawing. To enlarge a drawing, use a larger grid (larger squares) than the one on the original picture. Use a smaller grid for reducing. Smaller grid units also work best for working with a very detailed picture.

Study the following example of enlarging this drawing of a dog to twice its present size (this is using a scale of 2:1).



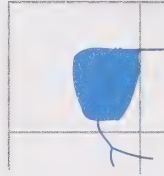
Step 1 Make a grid on tracing paper (each square in the grid here is $1\text{ cm} \times 1\text{ cm}$) and cover the drawing. Tape the corners of the tracing paper so it doesn't move.



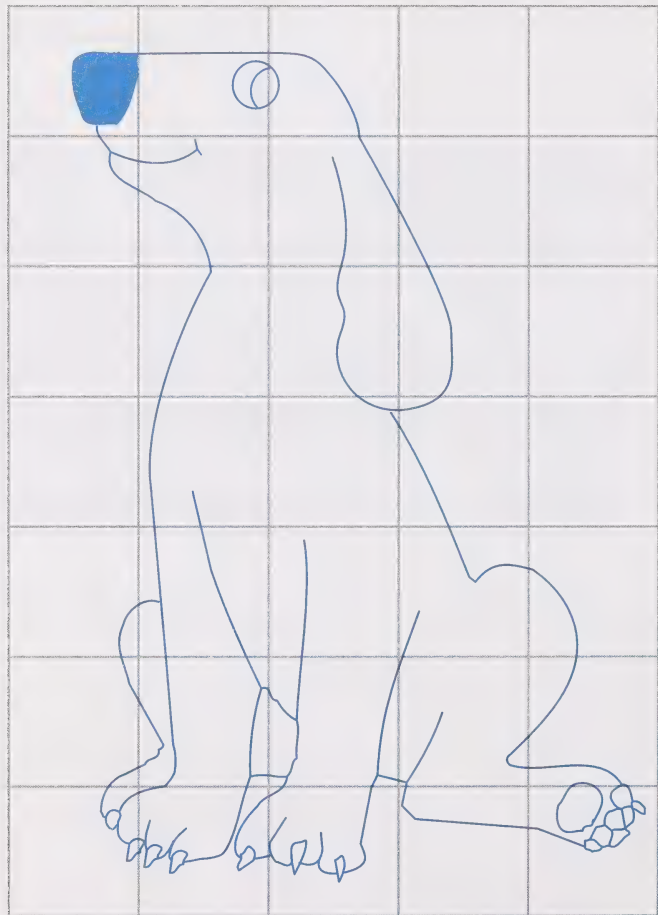
Step 2 Since you are enlarging the picture to twice the original size, make a grid of squares with sides twice as long as the grid in Step 1. Each square in the grid on your drawing paper will be $2\text{ cm} \times 2\text{ cm}$.

Step 3

Copy the contents of each square in the drawing to the corresponding square in the grid you have made to produce the enlargement. You have to use your judgment to guess distances that fall in-between the designated square size. (If exact detail is very important, you may wish to subdivide the grid on your tracing paper and the grid on your drawing paper.) For example, the contents of the upper left square will look like this:

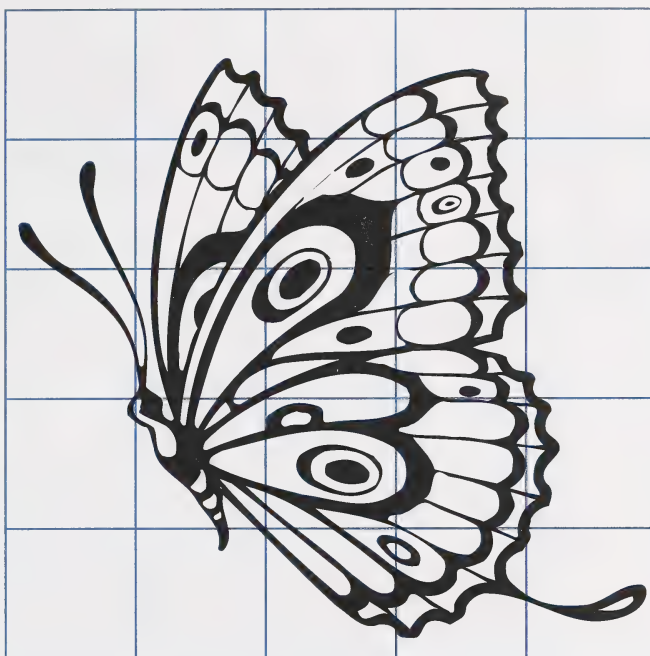


This is the enlargement of the drawing to twice its original size (the scale is 2:1).



You can now erase the lines of your grid.

4. Practise reducing and enlarging by reproducing the butterfly shape.



For this exercise, do not remove the grid lines from your examples. You may wish to include your drawings when you submit your portfolio.

- a. Draw a butterfly that is one-half of the shown size (that is, use a scale of 1:2). **Hint:** You will need a 1-cm grid.
 - b. Draw a butterfly that is three times the size of the one you drew in part a. (that is, use a scale of 3:1).
5. If a dimension is 55 mm and each square is 10 mm, how many squares will you need to use to represent the dimension?
6. Practise drawing a simple scale plan of your bedroom. To do this, you must first measure the walls, closet(s), doorway(s), window(s), and furniture (if you wish). You may use a flexible measuring tape or a standard metre-stick.

Choose a scale that best represents the size of your room and draw your plan on graphing grid paper. Indicate the location of windows, doors, closets, and/or any other architectural details (window seats, alcoves). You may include drawings of your furniture if you wish. Be sure to indicate the scale you are using.

Compare your responses with those in the Appendix, Section 3: Activity 2.

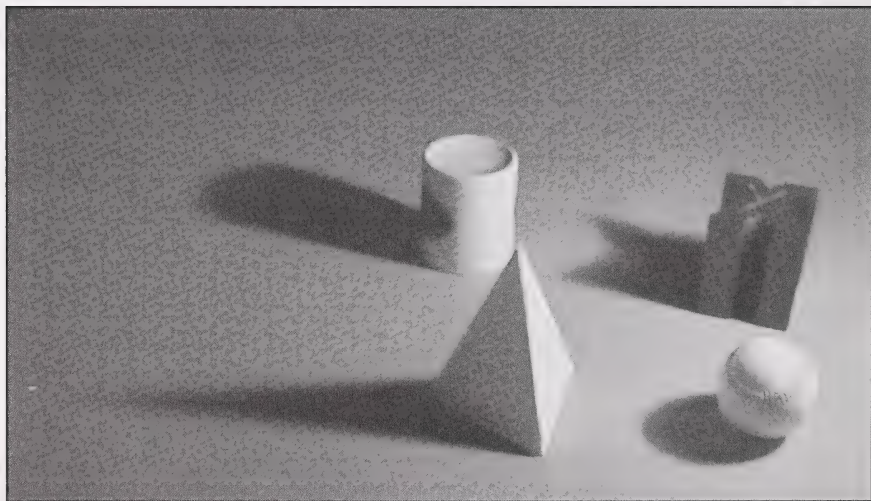
Designing Techniques Using Scientific Principles

Using Shadow

Designers use tones and shading and texture to give their projects a unique look. Another technique to add interest to a work is the use of shadow. In science, you may have learned that a shadow is created when rays of light are blocked by a solid object. The area behind the object will appear darker.

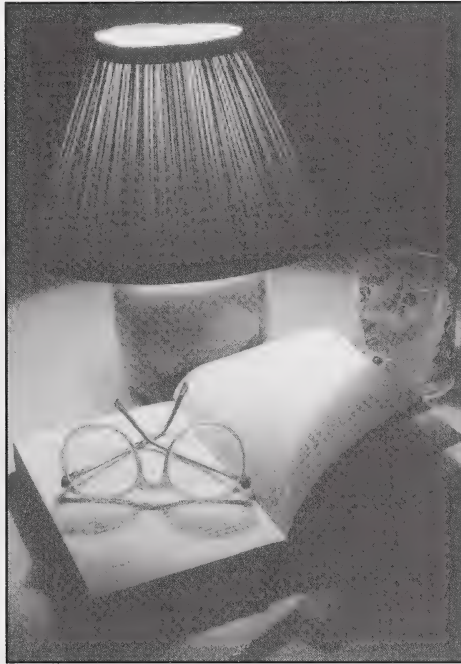
In designs, you can create the effect of shadows to give the design a look of depth and background. Using the concept of shadows is very effective when designing three-dimensional projects, but it can also give the appearance of depth to two-dimensional work. For the best results, consider the following suggestions:

- Remember the concepts of science.
 - The shape of the shadow will depend on the shape of the solid object blocking the light. For example, a round shape will produce a round shadow.
 - The closer an object is to the wall or ground, the sharper the shadow. A bird sitting on a pole casts a fuzzy shadow, whereas your own shadow has a sharper edge.
 - Shadows lengthen when the light source is in a low position and shorten when the source of light is higher.



- Position the shadow correctly.
 - The shadow should be drawn on the side farthest from the source of light.
 - All shadows in the project must appear on the same side to indicate unity in the design.

- Consider the colour of a shadow. A shadow is not really black; it is a darker tone of the surface on which it falls.
 - If your background is green, for example, create all of your shadows with a dark green.
 - If your design is black and white, the shadows can be made with a dark grey.
- Remember the shape of the object. Shadows are not only found behind an object. They can also appear inside hollows and under ledges or curves.



7. Explore shadows. Go outdoors on a sunny morning and observe the shapes and shades of shadows. Go outdoors at noon and late afternoon and observe the same shadows. Draw the various shadows and/or explain in words any differences you find.

Alternatively, use a lamp indoors to explore shadows. Position the lamp at different levels to see the effects.

8. Draw your initials in capital block-style letters. Create a shadow effect behind each letter. You may wish to repeat this exercise using the light source at different heights.

Compare your responses with those in the Appendix, Section 3: Activity 2.



In Activity 3, you studied some designing techniques used by designers. These techniques involve concepts from science and mathematics.

- the off-centre rule
- the flow of a triangle
- the golden section
- using guide lines
- drawing to scale using a grid
- using shadow

YMS

ACTIVITY 3

The Design Process

▼
design process:
*a problem-solving
method that helps
designers design
and make objects*
▲

All designers have one thing in common—they practise a **design process**, a way of working through design projects. The design process is a problem-solving method that helps designers when designing and making objects.



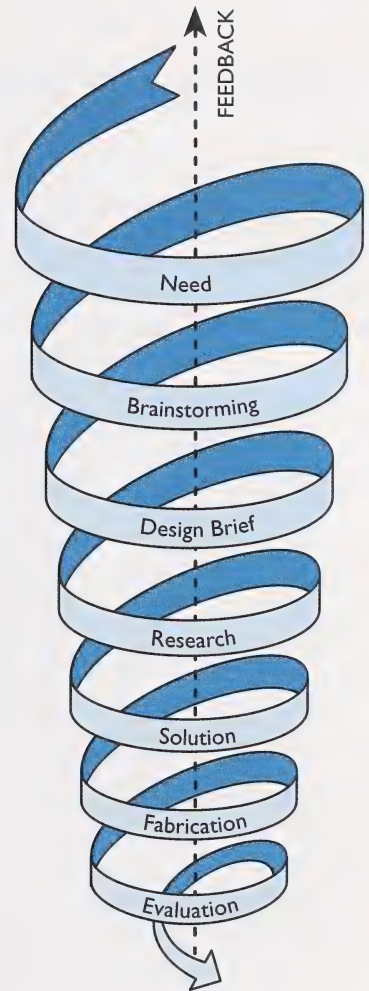
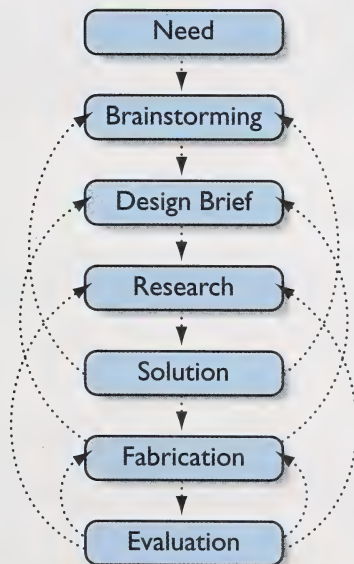
This process consists of a series of different stages. No one process is suitable for every situation. In this activity, you will study a simplified version of a design process, which can be adapted to suit the project you are working on.

The design process helps you organize a design project in a meaningful way. Without a framework for doing design work, the designer's ideas and thoughts remain a chaotic collection of meaningless bits. Once organized and presented using the design process, these unconnected bits form clear and concise ideas. This framework, as an integrated presentation of the design solution, allows you to move through the design project effectively and arrive at an acceptable outcome.

The design process is comprised of different stages that follow one another to ensure that no part of a problem is overlooked and that no opportunities are omitted.

The stages of the design process are as follows:

- need
- brainstorming
- design brief
- research
- solution
- fabrication
- evaluation



Every time you start a project, you should use the steps of the design process to clarify your ideas. If you experience difficulty at any one stage, you can go to the previous stage to do more work on it.

Looping back and re-entering the design-process stages at an earlier point allows you to try another strategy, develop new ideas, or gather more information on a new development.

Need

All design processes start with a need or a description of the problem. This statement describes the outcome(s) that the design solution should fulfil at the completion of the design project. It states the challenge for the designer. The need statement is the most important part of the design process and must be carefully worded to be effective. Consider the following situation.

You are a graphic artist and you have been contracted to design a CD jacket insert for a CD to be released within several months by the most popular band in town. You are excited about this opportunity because you see it as a way to break into a niche market. You have some ideas that you would like to try. You know that you would need to work carefully and quickly in order to efficiently meet the deadline of six weeks. Time means money to you in this case.

Your first job is to meet with the band, Everybody's Socks, to see what information the band wants on its CD jacket insert. You want to hear the band's ideas for the finished product and to find out as many details about the band as you can.

One thing you know for sure is that you need to be organized. You will rely on the design process to guide you.

To help you decide on the need, you have decided to ask the band members what kind of a CD jacket insert they require.



1. List at least three questions you would ask the band members in order to gain an insight into what they would like on their CD jacket insert.

Compare your response with the one in the Appendix, Section 3: Activity 3.

A meeting with the band has revealed the CD jacket insert must meet the following requirements:

- The CD jacket insert must be attractive to a teenage audience.
- The jacket must have bright colours.
- Two-dimensional hand drawings and/or computer graphics may be used.
- Photographs can also be used.
- The CD jacket must be made of bond paper to keep within the budget.

2. After meeting with the band, determine the need statement.

Compare your response with the one in the Appendix, Section 3: Activity 3.

Brainstorming

Once you have determined a need, you can brainstorm to generate ideas for satisfying the need. Brainstorming is a quick way to generate ideas either verbally or on paper. You can brainstorm by yourself or with others. Consider all imaginable choices of action that might be relevant to solving the problem. It is a good idea to generate as many ideas as possible.



To brainstorm, you can write, list, describe, or sketch possible alternatives. You can also use computer drawings. It is a good idea to have a minimum of five solutions. You can narrow down the possibilities later.

Following are some general guidelines to follow when brainstorming:

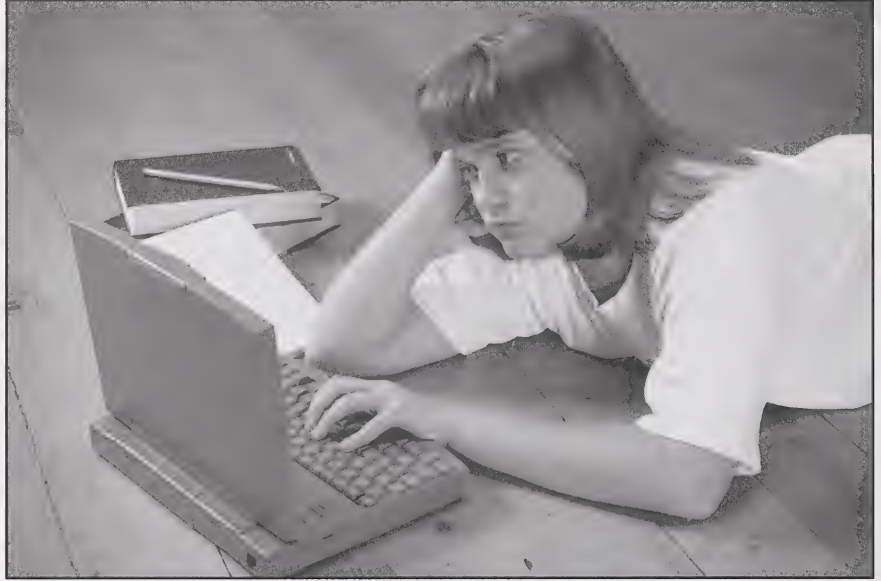
- Know what need is to be fulfilled.
 - Accept all creative, unusual, and bizarre ideas and evaluate them later.
 - Create new ideas by combining or modifying suggested ideas.
3. Brainstorm at least five possible solutions for the need you identified in question 2.

Compare your responses with those in the Appendix, Section 3: Activity 3.

Design Brief

▼
design brief: a short statement that explains what a designer wants to make
▲

A **design brief** is a short statement of the need you identified in the first stage (need). It describes what you need to create to solve the problem. The design brief provides background information to better explain the need. It adds some substance to a need statement, which is usually concise and to the point. It identifies the task and can specify constraints (restrictions) and/or considerations. It can include specifications and details that the design solution must meet. It is a very important part of the design process.



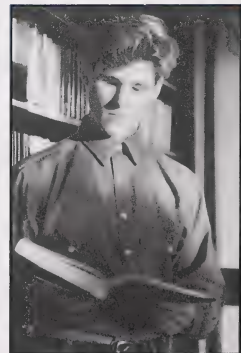
4. Write a design brief for the need you brainstormed in question 2.

Compare your response with the one in the Appendix, Section 3: Activity 3.

Research

Because the design brief is a short statement, it does not give you sufficient information for finding a design solution to the problem. This is where the research stage enters into the design process and why it is essential.

The nature of your research will depend on the type of design problem you are trying to solve. It involves asking yourself a series of questions related to the problem and finding the answers to the questions.



Some research questions you might pursue include the following:

- What procedure will be used to construct this design?
 - What kinds of tools will be used to make the design?
 - What kinds of materials can be used to make the design?
 - How will the size be determined?
 - Is the design dangerous in any way?
 - How much will the design cost to produce?
 - How much time will be required to make the design?
5. List the questions you would ask in the research stage for the need you identified in question 2.

Compare your responses with those in the Appendix, Section 3: Activity 3.

Once these questions have been answered, the next step is to examine the possible solutions to see how appropriate each one is. To do this, you may consider the following **design factors**:

▼
design factors:
*considerations
(such as function,
safety, aesthetics,
materials, size
and weight,
maintenance,
and ergonomics)
that must be
taken into
account when
creating any
design*

- **function:** The design should live up to its intended purpose.
- **safety:** The design should be safe to use (avoid toxic and hazardous materials).
- **aesthetics:** The appearance should be suitable to the design's function and the environment.
- **materials:** The materials should be suitable, appropriate, available, and within budget restraints.
- **size and weight:** Portability, storage, and materials should be considered.
- **maintenance:** The design should be durable; repairs and/or parts should be readily available.
- **ergonomics:** The size, shape, comfort, and ease of use in relation to human size and form should be considered.



▲
ergonomics: *the
study of people in
relation to their
work and
environment*

For some projects, some design factors are more important than others. For example, for making a CD jacket insert, function, aesthetics, materials, size and weight, and maintenance are more of an issue than safety.

One way you can rate each possible idea according to the design factors is to use a chart. You can set up a chart with the design factors listed vertically and the possible ideas listed horizontally.

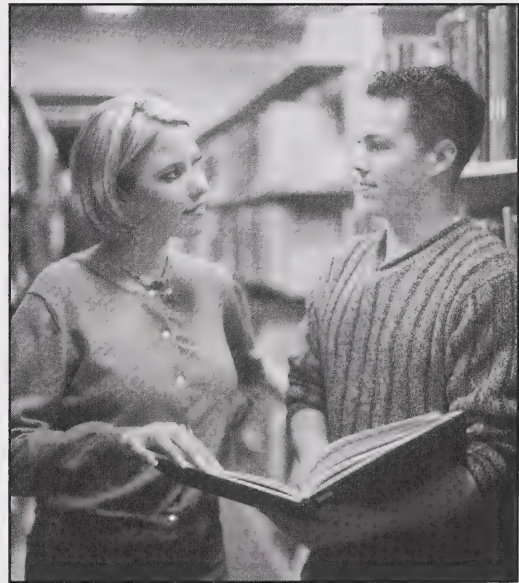
Then, make yourself a scale—for example, a 5 could mean excellent and a 1 could mean poor—and rate each possible idea against each design factor. Add up the totals to see which idea meets most or all of the design factors.

6. Review the brainstormed ideas you developed for your identified need (see question 3). To show you how your ideas relate to the design factors, draw a chart with the design factors listed vertically and your possible ideas listed horizontally.
 - a. Rate each of your ideas against each of the design factors.
 - b. Which idea received the highest score?
 - c. Will you choose to create the idea having the highest score? Explain why or why not.

Compare your responses with those in the Appendix, Section 3: Activity 3.

To do your research, you may have to acquire information from other sources. These are some sources that may be helpful:

- professionals, such as artists, architects, scientists, engineers, tradespeople, technicians, carpenters, craftspeople, and designers (industrial, graphic, and interior)
- bookstores (magazines, newspapers, special trade publications, videotapes, audiotapes, computer software)
- colleges, universities, and other post-secondary institutions
- local industries
- libraries
- museums
- the Internet



7. From what sources would you gather more information when doing research for your CD-jacket-insert project?

Compare your response with the one in the Appendix, Section 3: Activity 3.

Solution

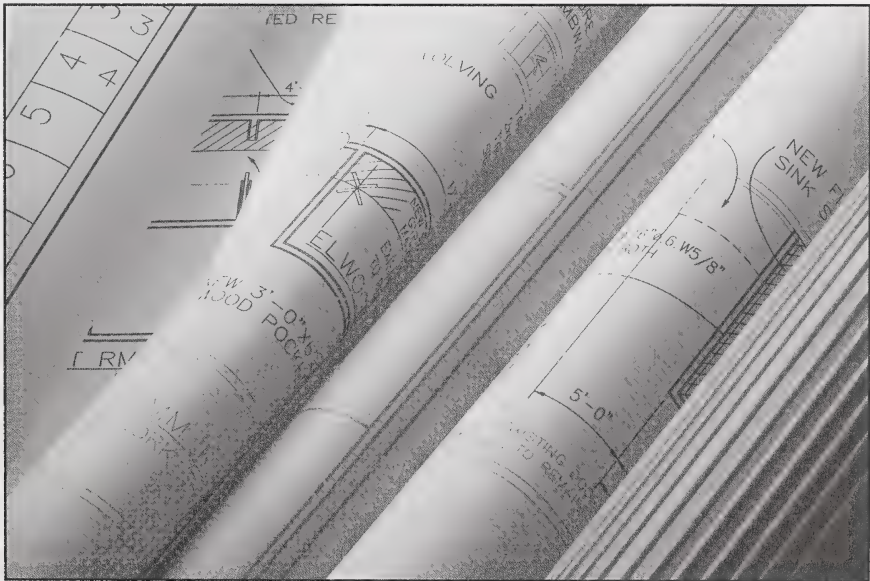
You have completed the initial stages of the design process:

- need
- design brief
- brainstorming
- research

You are ready to go through your ideas and select the best solution. The solution stage involves reviewing the need to be sure you fully understand the problem and then going through your brainstorming ideas and selecting the ideas that you feel will help you create something that will satisfy the need. Consider the positive and negative consequences and the possible outcomes of each idea. For each idea, consider the following:

- materials
- procedures
- time available

Reviewing your collected research data is also a must for selecting a solution. After you have generated some research, you can decide which idea is the most suitable.



You can develop this idea by making further drawings.

**working****drawings:**

drawings that show all the dimensions and details needed for an object to be made exactly as the design requires

models:

built-to-scale representations of objects

Models are made to help work out any problems that may occur while making the final object(s).

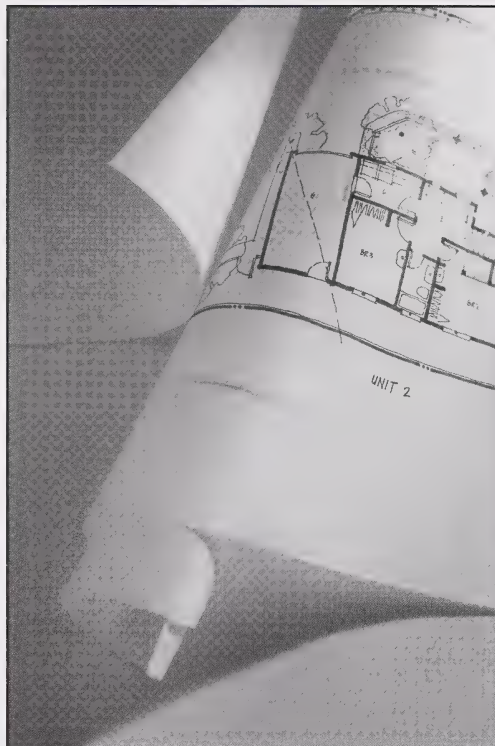
mockups:

full-sized models built to scale (1:1); a model that is the actual size of the object

presentation**drawings:**

drawings that give clear pictures of how a design will look when it is made

At this stage you will be working with any photocopied materials, notes, preliminary sketches, and **working drawings**. You can begin making partial solutions, which may involve making **models** and **mockups** to be sure your measurements are accurate. Much of your solution stage should become part of your overall design portfolio. From your models, mockups, and working drawings, you can then make **presentation drawings**.



These drawings are used to communicate the realistic version of what the final product will look like, before it is actually made. At this point, you show the presentation drawings to your clients—the band members. Together, you discuss the ideas, make changes, and make final decisions about the design. The presentation drawings allow you to make aesthetic and functional judgments and to correct any mistakes before the real thing is made. This step helps you avoid mistakes, waste, and extra work.

8. a. What is the difference between a model and a mockup?
- b. Select a solution for the need you drafted questions for in the research stage. Write a paragraph explaining why you selected your solution.
- c. Did you make a model or mockup of your solution? Explain why or why not.

Compare your responses with those in the Appendix, Section 3: Activity 3.

Fabrication

In this stage, you will be using the materials, tools, and procedures you decided upon in the solution stage. Remember, the fabrication stage must be suitable to the design you decided to make. You need to know how to use each tool safely.



▼
prototype: the first full-scale and usually functional form of a new design

A prototype is tested and evaluated before the design item is mass-produced.
▲

At this point, designers often make a **prototype**—a full-scale and usually functional form of the item being designed. Making a prototype ensures that the item can withstand regular wear and tear, and it is, therefore, made of its actual material(s). This prototype is used to test and verify the design of an item. The traits that are tested include the following:

- strength
- durability
- safety

Some projects are more involved than others; that is, they involve using several or more complicated materials, tools, and procedures. (Reminder: This course involves only simple design projects.)

If the test results are not favourable, modifications are made to the prototype before mass production of the item goes ahead. It is important that the item meets the design constraints (restrictions) and/or considerations. This is ensured by rigorous testing.

9. You found a solution for the need you identified in the previous stage. Now, make a prototype of this object using the required materials, tools, and procedures.

Compare your response with the one in the Appendix, Section 3: Activity 3.



Evaluation

Evaluation is the final stage of the design process. In this stage, the finished item is tested in order to evaluate its success. To do an evaluation, you should go over and review the stages of the design process.

You should consider the following questions when doing your evaluation:

- Does the item satisfy the identified need?
- Does the design brief explain exactly what you want to fabricate?
- Was the research current, accurate, and appropriate?
- Was the procedure suitable for making the item?
- Were the design factors considered when rating the ideas?
- Did the item solve the problem?
- Did the materials and tools lend themselves well to creating the object?
- Is the design different from or similar to others used for the same purpose?
- How does the item work under conditions in which it will eventually be used?



After evaluating your project, you may find that you need to make some improvements. This is done by going back and reviewing the stages of the design process and making the changes you feel are necessary to improve your project. Your evaluation can be done by yourself and/or others. It can be done verbally or in writing and can include charts, graphs, lists, notes, sketches, and comments.

10. You have made a prototype of the designed object that fulfils a need you identified.
 - a. How would you evaluate your project?
 - b. Write out your evaluation. Remember you can use charts, graphs, lists, notes, sketches, and comments.

Compare your responses with those in the Appendix, Section 3: Activity 3.



For additional material on the design process, view the video *A Design Project—Case Study: Four Responses to a Design Brief*. The video focuses on the design processes undertaken by four international design teams to design contemporary travel trailers. It investigates the following:

- design brief
- initial responses
- idea development
- methods for visualizing ideas
- the selection of materials
- production of the design

Factors that influenced the designs are discussed, including historical developments, lifestyle, environmental concerns, cost, innovation, and collaboration.

In this activity you examined the following seven stages of the design process:

- need
- brainstorming
- design brief
- research
- solution
- fabrication
- evaluation

These stages are followed as you work through your design projects. If you encounter difficulty at any of the stages, you can loop back to the previous stage(s) before going any farther. This allows you to do extra work that will be helpful when re-entering the stage.

FOLLOW-UP ACTIVITIES

If you had difficulty completing the sectional activities, it is recommended that you do the Extra Help. If you did not experience difficulty, it is recommended that you do the Enrichment. You may do both.

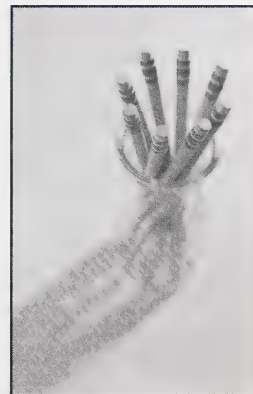


Extra Help

In Activity 1, you studied some of the different kinds of media available for drawing and sketching. They included

- pencils
- technical pens
- fine-line markers
- felt pens
- studio markers
- pencil crayons
- paint
- brushes
- inks
- paper
- plastics
- metals
- wood
- computers

It is important to choose the appropriate media for doing specific design work and producing the best results.



1. List some of the tools and media you will use in design studies and indicate a purpose for each.

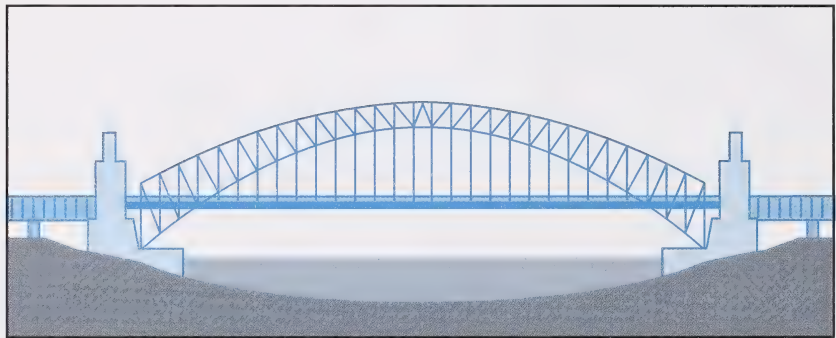
Compare your responses with those in the Appendix, Section 3: Extra Help.

Pencils are your basic tool for sketching and design work. Pencils are graded according to hardness and softness.

- Soft-leaded pencils leave more black graphite on the paper and make richer, darker marks than hard-leaded pencils. They wear away rapidly, but are great for producing quick design sketches.
- Hard pencils produce sharper, finer lines. They keep their point much longer than soft pencils and are most useful when producing accurate drawings with precise measurements.



2. When using felt pens, studio markers, or paints, which will be the very last colours used (light, medium, dark)?
3. What media might you use to complete a drawing like the following?



Compare your responses with those in the Appendix, Section 3: Extra Help.

Activity 2 focused on the techniques involving mathematics or scientific concepts of the design trade. You became familiar with the following designing techniques:

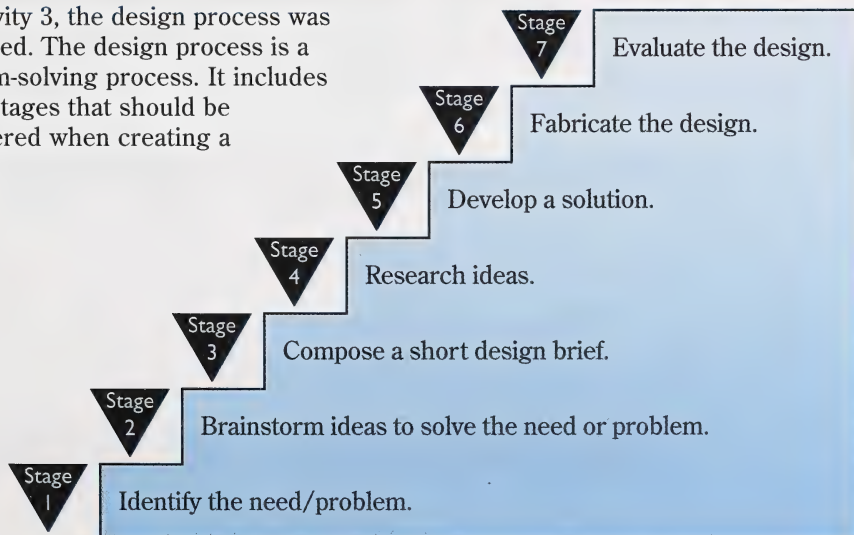
- the off-centre rule
- the flow of a triangle
- the golden section
- using guide lines
- drawing to scale using a grid
- using shadow

4. What shape and flow of a triangle was used by the designer to create each of the following flower arrangements?



Compare your responses with those in the Appendix, Section 3: Extra Help.

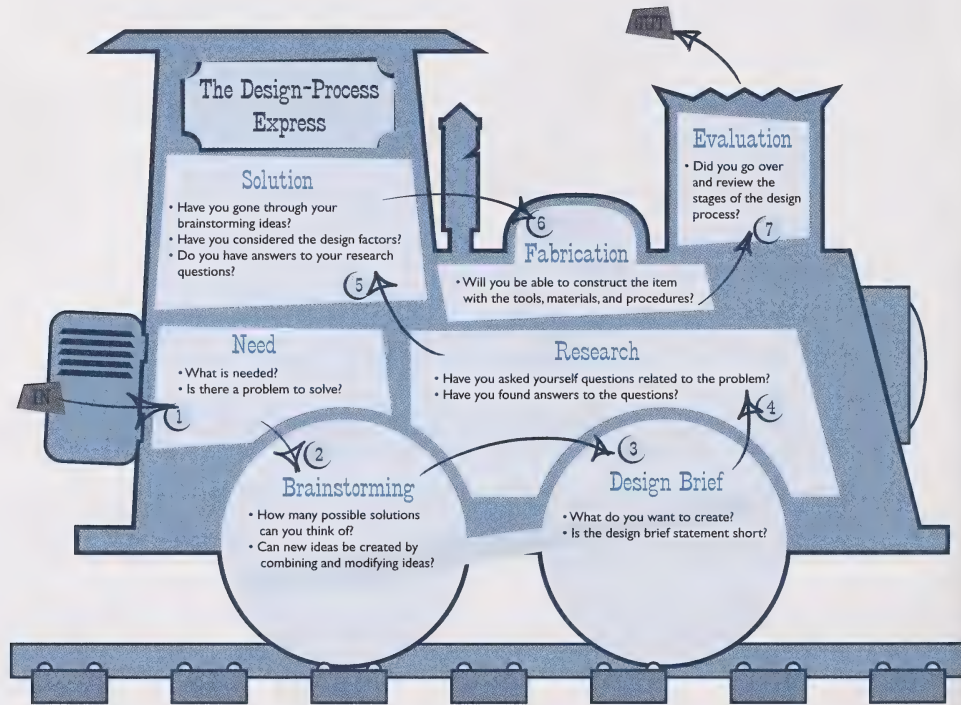
In Activity 3, the design process was discussed. The design process is a problem-solving process. It includes seven stages that should be considered when creating a design.



The design process will help you organize a design project in a meaningful way that will lead to a greater chance that your problem will be solved. Without a framework for doing design work, your design ideas and thoughts remain a chaotic collection of meaningless bits. Once organized and presented using the design process, these unconnected bits form clear and concise ideas; they can be organized into an integrated presentation of the design solution. This framework allows you to move through the design project effectively and arrive at an acceptable outcome.

The design process provides a method for doing a design project in an accepted way. It proceeds as a series of stages beginning with the definition of the design need or problem and ending with the evaluation of the final chosen solution.

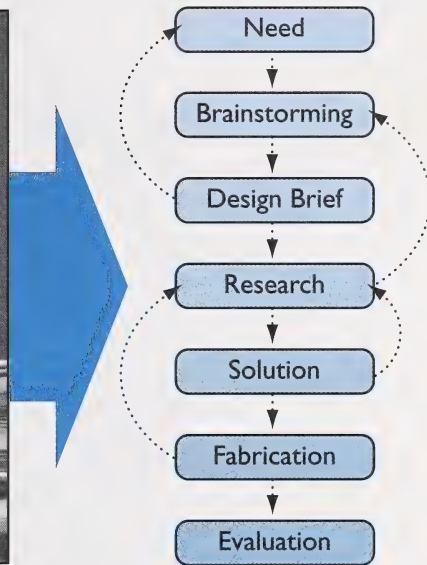
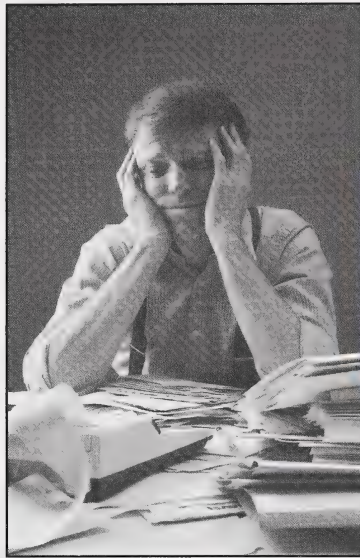
Following is a diagram summarizing the seven stages of the design process.



5. What is the purpose of the design process?
6. With what does a design process start?
7. What kind of a method is the design process?

Compare your responses with those in the Appendix, Section 3: Extra Help.

One advantage of using the design process is that if you become stuck at one stage, you can loop back, re-enter a previous stage, and do extra work that will help you proceed to the next stage.



Probably one of the most difficult parts of solving a design problem is coming up with possible solutions for the problem. Ideas that buzz around will have to come out onto paper so that you can evaluate them or show them to others. If your mind is quiet and there is no buzz of ideas, you will have to go back to the research stage and start looking at existing, similar solutions to the problem.

The need statement is the most important part of the design process and it must be worded very carefully if you want the final project to satisfy the need. The careful wording helps you better understand the need that has been written and it will help you to better interpret the need when writing the design brief. Getting to know and understand the design brief will give you a better foundation in the design process.

For the brainstorming step, you will develop ideas for satisfying the need. You should write, list, describe, or sketch possible alternatives. You could also use computer-generated drawings. It is a good idea to have a minimum of five solutions or designs to consider. You will narrow down the possibilities later in the process.

Your design brief is a short statement that will explain what you need to do to solve your problem. It can be a concise statement of the need you identified in the first stage. It should describe what you need to create to solve the problem and reminds you of the task you have undertaken. It can specify constraints, restrictions, and/or considerations you must analyse before completing the final project.

In the next stage, you research the ideas you have developed. To do your research, you may have to acquire information from the following

- professional designers
- material at libraries or museums (special trade publications, videotapes, audiotapes, computer software)
- print sources (books, magazines, newspapers, Yellow Pages)
- colleges, universities, and other post-secondary institutions
- the Internet

When examining your possible solutions, it is important to look at how appropriate each one is. To do this, you may consider some of the following design factors:

- **function:** Does the object or design live up to its intended purpose?
- **safety:** Will the object be safe to use?
- **aesthetics:** Does the design's or object's appearance suit its function?
- **materials:** Are the materials appropriate and available?
- **size and weight:** Does the design or object meet specifications?
- **maintenance:** Will the design or object be durable?
- **ergonomics:** Was the size, shape, comfort, and ease of use in relation to the human size and form considered?

In the next stage of the design process, you select the best solution. You may want to discuss the selections with experts in the field, a friend, your teacher or mentor, or family members to get additional opinions. Consider the tools, materials, procedures, and time you will need to complete this project. Review your brainstorming ideas and the information you collected through research.



You will complete models, mockups, or working drawings. You can include dimensions, materials, processes, and finishes needed for the final product. At this stage you present the drawings or models to your client. You will discuss ideas, make changes, and make final decisions about the design. You can make aesthetic and functional judgments and correct any mistakes before the real design or object is produced.

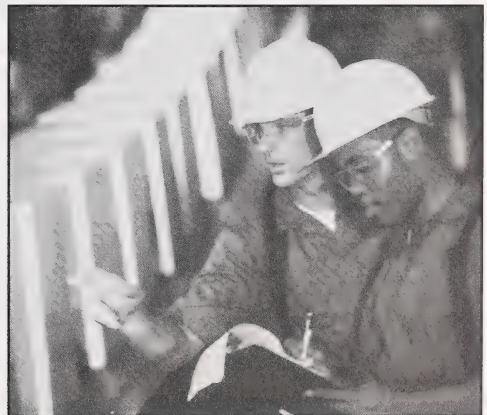


In the fabrication stage, you use the materials, tools, and procedures you decided upon in the solutions stage to make the final project.

In industry, designers make a prototype—an actual-sized model of the item being designed. This prototype is used to test and verify the design of an item, ensuring that the item can withstand regular wear and tear. Strength, safety, and durability are some traits that must be tested. If an item does not meet the expected standards, then the design is not successful and modifications will have to be made before the item goes into mass production.

The final stage in the design process is evaluation. The finished item must be tested in order to evaluate its success. Designs must not be offensive to consumers and they take into account the following:

- function
- safety
- aesthetics
- materials
- size and weight
- maintenance
- ergonomics



Evaluations help you to do the following:

- refine your work
- develop a sense of design and a critical eye for assessing projects
- improve your design



8. Suppose you are entering a design contest. The first prize is a complete bedroom make-over.

The rules of the contest require that you design the interior of a bedroom 3.40 m \times 3.90 m. The bedroom has an attached closet 1.40 m \times 0.70 m, one doorway, and a window 1.5 m \times 1.5 m.



The design brief is as follows:

To design a bedroom plan, suitable for a male or female teenager, which makes the most of the space available in the bedroom plan provided; has a colour scheme that includes consideration of tints, shades, and fabric patterns; has soft furnishings (items that provide finishing touches, for example, footstools, area rugs, ornaments, bedspreads) with samples of fabrics; and considers the balance of the furniture between its looks and practicality

- a. What are the considerations and/or constraints in this design brief?
- b. Suggest two strategies for doing the research for this design project.
- c. Why would colour be important in a project like this?
- d. List two soft furnishings you might include in a bedroom design.
- e. How could a designer work out positions of furniture on the floor plan?
- f. What reason might you provide for locating a lamp next to the bed?
- g. What materials might you use to create a model of the bedroom? Why?

Compare your responses with those in the Appendix, Section 3: Extra Help.

Note: You may wish to try this design project and include your design as part of your portfolio.



Communication



Do **one or more** of the following.

1. Talk to some designers about the tools, techniques, and design processes they use to create things.

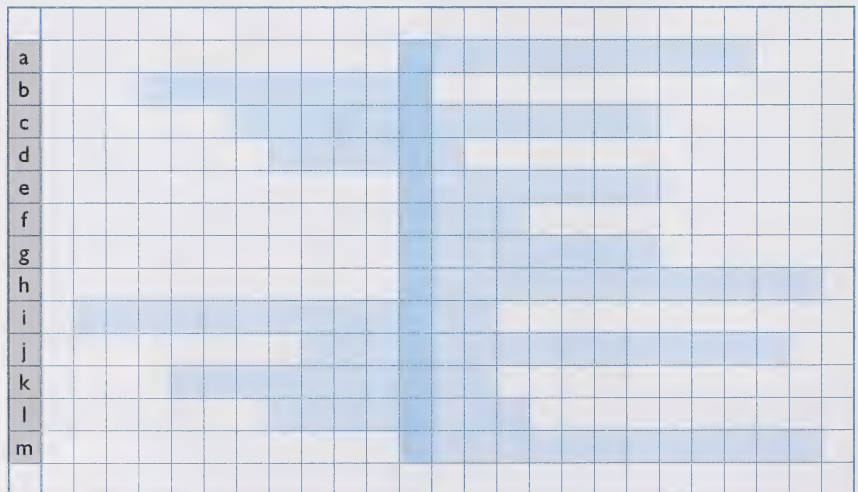
Compare their ideas with the design process you have studied in this section. You may wish to write a report of your findings and include it in your design journal.

2. Look at the following designs created by architects, artisans, and artists.



Were any mathematical or scientific concepts used in the designs?

3. Determine the words or phrases the following statements are referring to and place the terms in the corresponding locations on the diagram. Discover the hidden words in the dark-shaded column.
- a short statement indicating the need of a design project
 - to make a prototype
 - a design-process step in which ideas are generated
 - an inexpensive tool that should be kept sharp when drawing
 - involves the use of angles and shapes in mathematics
 - what the first step of the design process identifies
 - the fifth step of the design process
 - tools used for adding fine, inked lines to a design
 - a rule involving asymmetrical balance
 - an aesthetically pleasing ratio developed by the ancient Greeks
 - a step of the design process in which the safety of an object is tested
 - a term for the identical balance of an object on both sides of the centre
 - media (available in a variety of shades and colours) used to fill in designs



Compare your responses with those in the Appendix, Section 3: Enrichment.

CONCLUSION

Designers use appropriate media and certain techniques for expressing their ideas and sharing their visions. In this section, you became familiar with some of the different media available for drawing and sketching. You were encouraged to experiment with various media and techniques that would give your designs a professional look.

It is also quite amazing how mathematics and science are applied in the field of design and architecture. Aesthetically pleasing designs are amazingly complex and yet very simple. They make viewers stop and take a second look. You should begin to look at designs and start thinking about how they were created.



Many designs begin as simple drawings, but many ideas and details are added throughout the design process. The design process is an easy way to organize and think through the steps of creating an item. If a project becomes too overwhelming, take time to review the steps of the design process and do not hesitate to ask for the opinions of others. Enza was able to complete her design studies course by brainstorming ideas with her friend. Hopefully, you will also successfully complete this course.

ASSIGNMENT

Turn to Assignment Booklet A and do the assignment for Section 3.

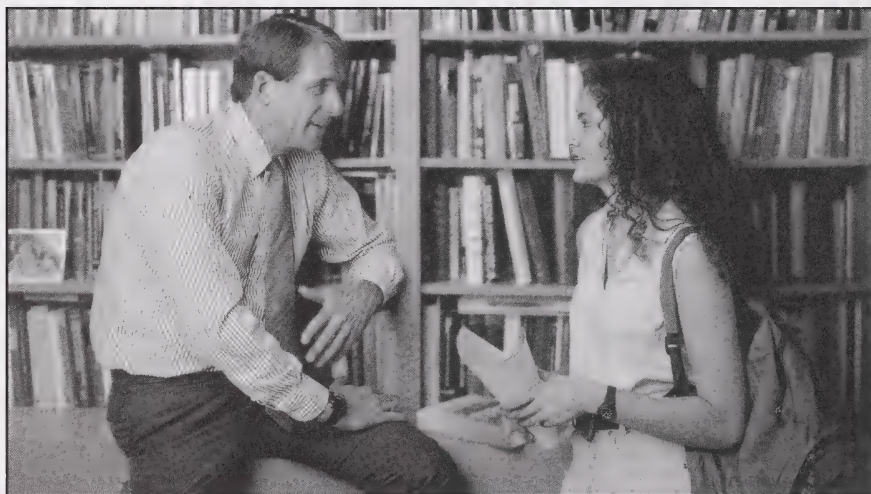


S • U • M • M • A • R • Y

In this course, you maintained and organized your design journal. You were given suggestions for selecting work for your design portfolio. You were encouraged to present your portfolio to a mentor. You also had the opportunity to discover or review the elements and principles of design. You became familiar with some of the different kinds of media that can be used effectively in your sketching and drawing. Some techniques were suggested to help your designs achieve a professional look. You were introduced to some of the principles of mathematics and science as they relate to two-dimensional design applications. You also followed the design process to solve two-dimensional design problems.

As you gain more skills and experience, you will be able to pursue more interesting and challenging design projects.

Whether you are creating designs for your school yearbook or the classroom walls, you will use various media and techniques, apply the elements and principles of design, and use the design process in your creations. Following the seven stages of the design process will enable you to complete your design projects successfully and in an organized way. Using this process also helps you find the best solution in the shortest time.



ASSIGNMENT

Turn to Assignment Booklet B and do the final course assignment for DES 2010.



Congratulations

You have completed

Design Studies 2010
2-D Design
Applications

COURSE SURVEY FOR DES 2010

(© 2001)

After you have completed the assignments in this course, please fill out this questionnaire and mail it to the address given on the last page. This course is designed in a new distance learning format, so we are interested in your responses. Your constructive comments will be greatly appreciated, as future course revisions can then incorporate any necessary improvements.

Name _____ Age ☐ under 19 ☐ 19 to 40 ☐ over 40
Address _____ File No. _____
_____ Date _____

Design

1. The Student Module Booklet contains a variety of self-assessed activities. Did you find it helpful to be able to check your work and have immediate feedback?

☐ Yes ☐ No If yes, explain.

2. Were the questions and directions easy to understand?

☐ Yes ☐ No If no, explain.

3. Each section contains Follow-up Activities. Which type of Follow-up Activity did you choose?

- ☐ mainly Extra Help
- ☐ mainly Enrichment
- ☐ a variety
- ☐ none

Did you find these activities beneficial?

- ☐ Yes ☐ No If no, explain.
-
-

4. Did you understand what was expected in the Assignment Booklets?

- ☐ Yes ☐ No If no, explain.
-
-

5. The course materials were designed to be completed by students working independently at a distance. Were you always aware of what you had to do?

- ☐ Yes ☐ No If no, provide details.
-
-

6. This distance learning course may include an assortment of drawings, photographs, and charts.

a. Did you find the visuals in this course helpful?

- ☐ Yes ☐ No Comment on the lines below.
-
-

b. Did you find the variety of visuals in this course motivating?

- ☐ Yes ☐ No Comment on the lines below.
-
-

7. Suggestions for audiocassette, videocassette, and computer activities may have been included in the course. Did you complete these media activities?

☐ Yes ☐ No Comment on the lines below.

Only students enrolled in a junior high course need to complete the following question.

8. The Student Module Booklet may have directed you to work with your teacher. How well did you work as a team?

Student's comments: _____

Teacher's comments: _____

Course Content

1. Was enough detailed information provided to help you learn the expected skills and objectives?

☐ Yes ☐ No Comment on the lines below.

2. Did you find the workload reasonable?

☐ Yes ☐ No If no, explain.

3. Did you have any difficulty with the reading level?

☐ Yes ☐ No Please comment.

4. How would you assess your general reading level?

☐ poor reader ☐ average reader ☐ good reader

5. Was the material presented clearly and with sufficient depth?

☐ Yes ☐ No If no, explain.

General

1. What did you like least about the course?

2. What did you like most about the course?

Additional Comments

Only students enrolled with the Alberta Distance Learning Centre need to complete the remaining questions.

1. Did you contact the Alberta Distance Learning Centre for help or information while doing your course?

☐ Yes ☐ No If yes, approximately how many times? _____

Did you find the staff helpful?

☐ Yes ☐ No If no, explain.

2. Were you able to fax or e-mail any of your assignment response pages?

☐ Yes ☐ No If yes, comment on the value of being able to do this.

3. If you mailed your assignment response pages, how long did it take for their return?

4. Was the feedback you received from your correspondence or distance learning teacher helpful?

☐ Yes ☐ No Please comment.

Thanks for taking the time to complete this questionnaire. Your feedback is important to us. Please return this questionnaire to the address on the right.

If you are enrolled at the Alberta Distance Learning Centre and will be mailing your Assignment Booklets to ADLC, you may return this questionnaire with Assignment Booklet B.

Instructional Design and Development
Learning Technologies Branch
Box 4000
Barrhead, Alberta
T7N 1P4



APPENDIX



Glossary

This section contains vocabulary that you should know from 2-D Design Applications.

analogous: colours next to each other on the colour wheel

asymmetrical balance: a type of balance in a design where one side appears different from the other but is balanced with it

balance: a principle of design that refers to equalization

complementary: colours that are opposite each other on the colour wheel; for example, red and green

contrast: a principle of design that refers to differences in line, shape, form, space, texture, pattern, and/or colour

cool colours: colours like blue, violet, and green, which seem to recede in a picture or move away from the viewer

crosshatching: crossed lines used to shade a drawing and increase the three-dimensional effect

design brief: a short statement that explains what a designer wants to make

design factors: considerations (such as function, safety, aesthetics, materials, size and weight, maintenance, and ergonomics) that must be taken into account when creating any design

design journal: a collection that may include such things as design drawings, sketches, ideas, notes, and pictures

design process: a problem-solving method that helps designers design and make objects

elements of design: a designer's tools for expressing ideas visually

They include line, shape, space, form, texture, colour, and pattern.

emphasis: a principle of design that places importance, prominence, or attention on certain areas or objects

ergonomics: the study of people in relation to their work and environment

fixative: a material used to prevent smearing

font: an assortment of one typestyle in one size

form: an object that has height, width, and depth

hatching: lines drawn close together to create texture

hue: the name of a colour

intensity: the brightness or dullness of a colour

job shadowing: a way of learning about an occupation by spending time with someone working in the field

line: a path that leads the eye through space between two points

logo: an image and/or graphic used to communicate information

media: materials and tools that a designer chooses to help create a design

Medium is the singular form of *media*.

mentor: a trusted advisor knowledgeable in a particular field

mockups: full-sized models built to scale (1:1); a model that is the actual size of the object

models: built-to-scale representations of objects

Models are made to help work out any problems that may occur while making the final object(s).

monochromatic: of one colour

motif: a distinctive, repeated element of design

movement: the principle of design that refers to the arrangement of parts in a design to create action or motion

overlapping: having one shape or object in front of another, often to create depth in a picture

palette: a flat, shaped board that holds paint and serves as a mixing surface

pattern: a series of repeated elements of design

portfolio: a collection of self-selected samples of work from your design journal that shows effort, progress, achievement, and accomplishments over time in a given area

presentation drawings: drawings that give clear pictures of how a design will look when it is made

proportion: the principle of design that deals with the way the parts of a design are arranged in comparison to the whole

prototype: the first full-scale and usually functional form of a new design

A prototype is tested and evaluated before the design item is mass-produced.

radial balance: balance where everything stems from a central point

random: an irregular way of selecting; having no definite plan or arrangement

render: represent or give information in a visual way

rhythm: a principle of design that indicates a type of movement in a design

Rhythm is usually created by a repetition of one or more elements of design.

scanning: using a scanner that interprets and reproduces an image using a moving beam of light

shape: the element of design that is two-dimensional and encloses space

symmetrical balance: a type of balance where both sides are identical after a design is divided in half along a line of symmetry

techniques: particular ways of using media to achieve certain results

tessellations: arrangements of identical figures that cover a surface without gaps or overlapping

texture: the element of design that refers to the feel (rough, smooth, soft) of a surface

three-dimensional (3-D): having length, width, and depth or height

thumbnail sketches: small sketches measuring approximately 2.5 cm by 2.5 cm

two-dimensional (2-D): having length and width, but no thickness, depth, or height

unity: a principle of design that relates to a sense of wholeness, harmony, and consistency

value: the lightness or darkness of a colour

warm colours: colours like red, yellow, and orange, which seem to advance on a page and add warmth to an object

working drawings: drawings that show all the dimensions and details needed for an object to be made exactly as the design requires

Suggested Answers

Section I: Activity I

1. Other ideas for storing materials for your design journal may include the following:

- Use a diary or day planner to record ideas and insert material you have discovered on a particular day or week.
- Use a photo album to store the collection.
- Use a shoe box or recipe box; place ideas, photos, and notes on recipe cards.
- Organize your materials into file folders or large envelopes.
- Sort information into a folder box.
- Insert materials into slide-on plastic binding strips.
- Place materials into a binder.
- Create a folder by taping together two pieces of cardboard or poster board.

2. When beginning or reviewing your design journal, you should consider the following:

- What do you plan to put in your design journal? It could be a collection of design drawings, images, diagrams, sketches, ideas, notes, pictures, and projects.
- How do you plan to store your collection? (See question 1 for ideas.)
- Is it organized with sections or categories? You might consider these topics: thumbnail sketches, ideas, design ideas for gadgets, two-dimensional design work, photographs of three-dimensional design work, design projects, drafting applications, and multimedia applications.
- Can you identify the source of the information? Give the titles and dates of magazines or books; give dates of access and complete Internet addresses, where applicable.
- Have you dated all entries? Make a habit of signing and dating all your work.
- Are all items current and of value? Review the collection and remove information you feel is not needed.

Note: Do not destroy material until you are sure you will never use it. You may wish to add a separate file to hold materials that you are thinking of throwing away. You could revisit this file every so often to re-assess the materials.

3. A design journal should include the following:

- a collection of photographs, pictures, and graphics of design items that interest you
- notes about your thoughts, ideas, experiences, feelings, impressions, observations, descriptions, and plans
- your thumbnail sketches, design ideas, two-dimensional design work, photographs of three-dimensional design work, drafting applications, and multimedia applications

4. Does the checklist remind you of something you should include in your design journal? Are there any items you would add to the checklist?

Section I: Activity 2

1. The two purposes for having a design portfolio are as follows:

- for getting into a post-secondary institution, like design school or art college
- for assisting you in obtaining employment

2. A portfolio prepared for a job interview should include your best work that will

- introduce yourself
- highlight your innovative ideas and creative abilities
- be evidence of the type and quality of work you are capable of doing
- demonstrate you have the skill required for the job

3. A multimedia design portfolio may include the following:

- your paper design ideas and project work
- computer disks that contain samples of graphics or animations that you may have completed
- photographs, slides, and/or video clips, which you may have taken of your work
- overhead transparencies of your graphic designs

4. Some suggestions for organizing and maintaining your design portfolio could include the following:

- Select the work you want to include in your portfolio. Your work may include digitized photographs, computer files, work dubbed to video, hard copies of projects, awards received, commendations, and/or certificates.
- Prepare the selected work for inclusion in the portfolio. Remount or rework pieces if necessary. Date and sign each item.
- Apply your best technical skills in the presentation of your work; for example, check your spelling, accuracy in drawings, and straightness of mounted pictures.
- Maintain a design journal of preparatory and supplementary skills and/or ideas supporting each project or activity.
- Develop a reference list that outlines research you have used to support your work.

5. You should consider the following when creating, organizing, and maintaining your portfolio:

- using a binder and/or custom-designed folders
- deciding what to include (sketches, two-dimensional design work, photographs of three-dimensional design work, drafting applications, multimedia applications, and photographs)
- signing (your name) or initialing and dating each item
- writing a description or title on each piece of work
- doing reflective writing
- including multimedia projects
- being creative
- preparing selected work to include in the portfolio
- developing a reference list, which can be used to support your work

Your portfolio should have some of the following qualities:

- exhibits breadth and depth of capabilities in the work selected
- exhibits organization and attention to detail
- includes integration of academic and applied academic accomplishments
- illustrates personal-management skills
- illustrates teamwork skills where appropriate
- develops a tracking system for learning
- illustrates the application of technology, creativity, and thought
- uses the appropriate medium for the message
- summarizes accomplishments
- portrays excellence

Section 1: Activity 3

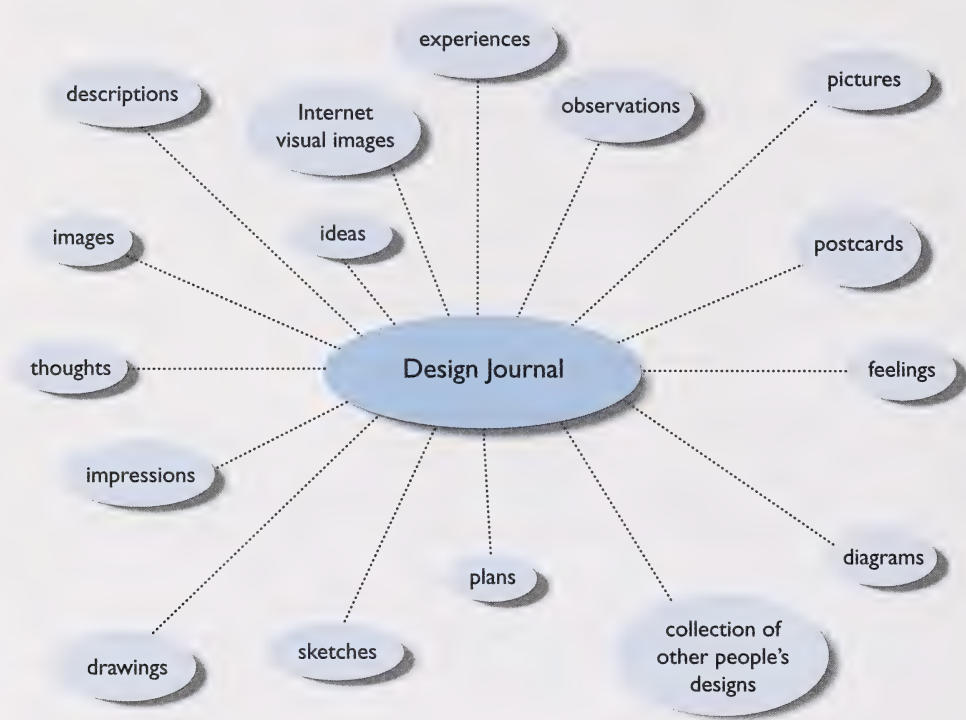
1. The preferred position is shown in Diagram A. The slightly larger border at the bottom helps to emphasize the drawing—it draws the viewer's attention to the drawing. It also gives a professional-looking appearance to the drawing.
2. The better layout design for grouping items is in Diagram B. The items of work are positioned so they form an interesting and balanced display. The grouping also looks organized and uncluttered.

3. A checklist for contacting a mentor or a business for the opportunity to job shadow could include the following:
- Gather information about your mentor or the business you hope to approach to make sure both will be able to assist you.
 - Contact the mentor or businessperson. Indicate you are looking forward to meeting with him or her.
 - Introduce yourself.
 - Explain that you are currently enrolled in design studies and would like to meet with your mentor or conduct a job shadow.
 - Determine how long your meeting will be.
 - Determine a date, time, and place to meet.
 - Thank the individual for his or her time in organizing this meeting.
4. These are some advantages of presenting your portfolio to a mentor:
- It gives you a chance to show your skills and abilities.
 - You can highlight your strengths, interests, creativity, experiences, and hard work.
 - You can receive some suggestions for improving your work.
 - You can determine if your talents are capable of competing in the job market.
 - You will gain experience in presenting your work so you will be prepared for job interviews.
5. You should discuss and include the following when presenting your portfolio:
- Discuss visuals and projects that showcase your best work and experiences.
 - Include personal assessment and reflective writing.
 - Discuss your interests and abilities, and highlight your learning experiences.
 - Highlight your innovative ideas and your ability to be creative, to work in a team, to be a leader, and to manage your learning.
 - Include outside school experiences and both paid and unpaid work experiences.
 - Organize your portfolio to demonstrate your best abilities and work for a particular purpose (for example, a specific job or art-school admission.)

Section I: Follow-up Activities

Extra Help

1. Your web diagram of what you may include in your design journal may look like the following one:



2. Through the development of your design journal, you will be able to do the following:

- Express yourself through a visual medium of sketching and drawing.
- Create a collection of ideas and visual images from magazines, newspapers, or the Internet.
- Identify your personal preferences and interests in graphic designs, sketching and drawing, designing/drafting, computer-graphic software applications, and multimedia applications.
- Become knowledgeable about your own skills and interests as you periodically review your own work and analyse your skills, techniques, abilities, and interests.
- Develop your ideas and interests into possible career opportunities.
- See progress and growth in your abilities in design applications.

3. The mechanics of organizing and maintaining a portfolio include the following:
 - form (Use a binder, custom-designed folders, or videotapes.)
 - how-to (Sign and date each item, write descriptions, do reflective writing, include multimedia projects, and be creative.)
 - qualities (A portfolio should show breadth and depth of capabilities, personal-management skills, teamwork skills, and accomplishments.)
 - detail (Provide a list and short description of the portfolio contents; pay attention to details.)
 - documentation (Document your accomplishments by selecting what to include in your portfolio, preparing the selected work, and developing a reference list.)
4. The strategies will strengthen your portfolio presentation because they help to emphasize your design skills, abilities, creativity, experiences, interests, and hard work.
5. The design portfolio is presented to mentors, employers, or for admission to post-secondary institutions because it is an organized collection of your best selected work. This selection shows your effort, progress, achievement, and accomplishments over time in a given area. It includes work that only you have done.

A design journal, on the other hand, is a collection of not only your design drawings, sketches, ideas, and notes, but designs, ideas, and pictures from a variety of sources.

Enrichment

1. This person may have indicated some of the following requirements for his or her portfolio:
 - The work has to be original.
 - The portfolio should include still lifes.
 - It may include sketches, notes, and work-in-progress.
 - It may specify sizes for drawings, paintings, and other work.
- There will be many other requirements for submitting a portfolio to a post-secondary institution. You may wish to include a report of your findings in your design journal.
2. Hopefully, you were successful in discovering other post-secondary art/design institutions and have contacted them for more information. If you do not have access to the Internet, you may find similar information through your local library or government departments (for example, Human Resources Development Canada).
 3. How did you rate your employability skills? Hopefully, you found completing the chart helpful in assessing your skills and setting goals for skills you would like to work on and improve.

4. a. Your prepared questions may be similar to any of the following ones:

- **description of career field**

- Could you describe a typical work day?
- What are some of your responsibilities?
- What kind of work does a beginner in this job have to do?
- What is the highest position to which this job could lead?
- What is the availability of work in this field of design?
- Are careers in this area of design likely to become more or less needed in the future?
- What are some of the job benefits, for example, breaks, holidays, medical benefits?
- Is it possible to have a flexible work day?
- Does this job provide any special opportunities or bonuses?
- Is there any opportunity for on-the-job training?
- How important is the ability to read, write, and do sketching and drawing?
- How important is the knowledge of mathematics in this job?
- How important is it to be able to talk to people in this job?
- Is there much paper work required by this job?
- Is this type of work seasonal?
- Is this job strictly indoors or outdoors or both?
- Does this job offer the opportunity to be creative? innovative?
- Does this job mainly involve taking orders from others? Explain.
- What type of decision-making does this job require?
- What is the average salary for the job?
- How is one paid—wages, salary, or commission?
- Is the pay weekly, bimonthly, or monthly?
- How many hours a week do you work?
- What is the most important asset a person needs to be successful in this type of work?
- What are the biggest stresses on the job?
- What chance is there that computers or other machines might take over this type of work?
- How is technology used in this field of design?
- What future trends do you see in your job that may affect your lifestyle?

- **choices in the career field**

- Did you choose the kind of work you are in now by careful planning, chance, or promotion?
- What other type(s) of work have you done previous to this job?
- If you were 16 years old today, what career directions would you choose?

- **education and/or training for the career field**

- What are the education and/or training requirements for this occupation?
- Where did you receive your education and training?
- What were the requirements for entering the educational institution or for the training?
- Where can the courses or training be taken today?
- What might the training cost?
- What subjects in school would best prepare someone for this training?
- Are there certain subjects you must take in order to enter the courses or training program?
- Is there financial help available to take the program?
- What advice would you give to adolescents in their career-planning today?

- **satisfactions in the career field**

- What do you like most about your work?
- What do you like least about your work?
- If you could change anything about your work, what would it be?

If the individual has established his or her own business, you may wish to ask questions like the following:

- Describe the kind of planning you did to establish your business.
- What is your schedule for an average work day?
- What are some of your particular duties as the owner of the business?
- How many hours a day do you work? How many days a week do you work?
- What are your future plans for the business? Do you plan on expansion in the future?
- Have you any suggestions for someone considering starting his or her own business?
- Describe the work experience one should have before beginning his or her own business.
- What are the most important qualities an entrepreneur must have for success?
- What types of skills are required by designers for this type of business?

b. Your report should include the following observations:

- Describe the work this person does. (Be specific.)
- Describe the working environment (location, surroundings, equipment, and so on).
- What skills and abilities, values, interests, and temperaments do you think a person in this occupation needs to have?
- What did you like best about this occupation? Why? How does the occupation “fit” you?
- What is one thing you can do immediately to help yourself prepare for this occupation?
- How would you rate this job-shadow experience on a scale of one to ten? Provide reasons for your rating.
- Include a write-up of this job shadow in your portfolio. Use the questions that you selected to guide you through your reflective writing.

Section 2: Activity 1

1. a. Everything around you exhibits one or more elements of design. Did your list include any of the following?

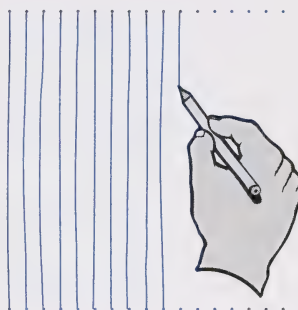
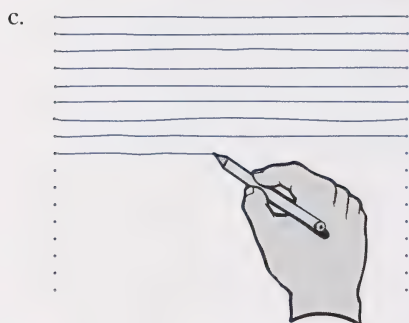
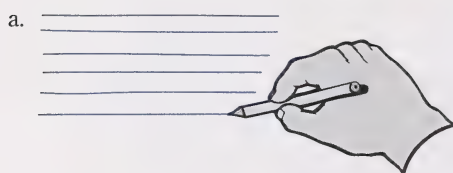
- | | |
|--------------------------------|-----------------------|
| • a rainbow | • a bridge |
| • a wool sweater | • a spider web |
| • a church | • ripples on a lake |
| • a newly constructed building | • trees in the forest |

b. Were you able to pick out a single element of design? Any one of the following elements of design could have impressed you the most:

- | | |
|---------|-----------|
| • line | • texture |
| • shape | • pattern |
| • form | • colour |
| • space | |

Be sure you have given the reason for your choice.

2. When sketching, remember to hold your pencil lightly between your thumb and first two fingers. Try to draw with your whole arm and not just by moving your wrist. Do not rest your hand on the paper. Keep your pencil sharp and use an HB or softer pencil. Sketch quickly and freely.



3. a. Your thumbnail sketch or sketches may look like any of the following:



- b. The lines are usually vertical, oblique, intersecting, angular, branching, and/or curved.

4. You may have chosen one or more of the following kinds of lines:

- vertical
- diagonal
- intersecting

- parallel
- angular

- horizontal
- branching

You may have indicated some of the following reasons for your choices:

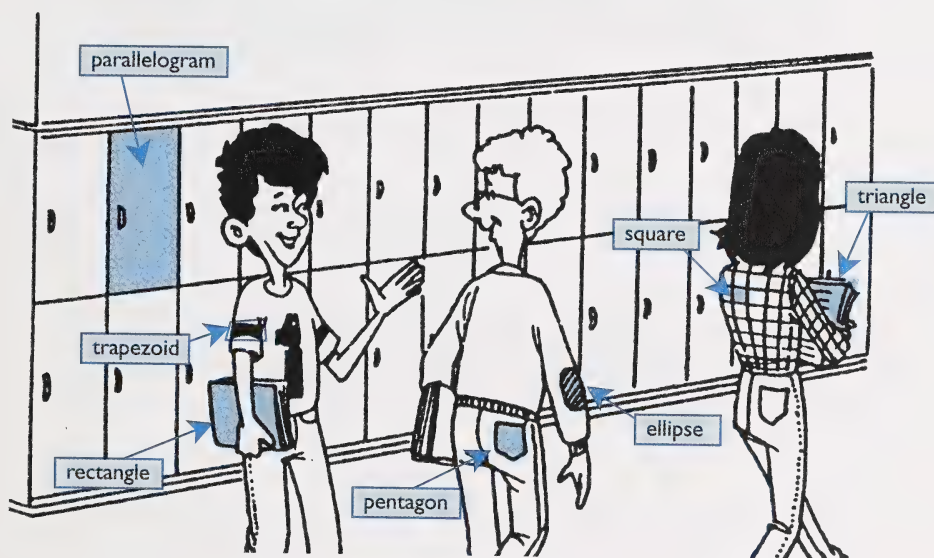
- Vertical lines suggest stability, dignity, and height.
- Horizontal lines suggest calmness, repose, breadth, and quietness.
- Diagonal lines represent movement, action, tension, and drama.
- Intersecting, parallel, angular, and branching lines suggest interest and excitement.

You may have other reasons for your choices.

5. Lines used to show direction and motion may look like the following examples.

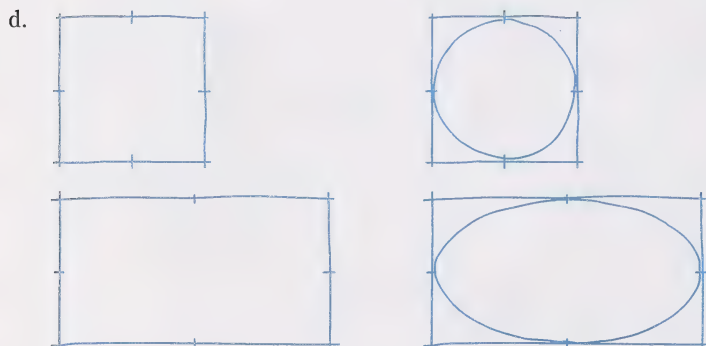
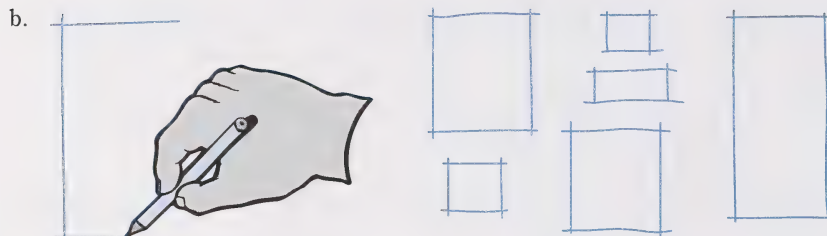
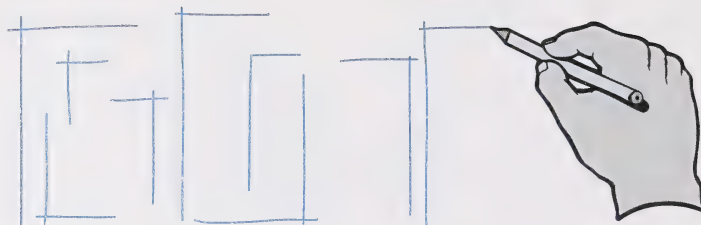


6. All the horizontal lines are equal in length. In each case, the additional lines create an illusion, making the line appear shorter or longer.
7. a. Heavy, jagged lines can express anger or violence.
b. Delicate, curved lines can express happiness or joy.
8. Heavy lines will make a design appear bolder so it will appear solid. Thin lines will make a design appear light in weight and give the impression of being very fragile.
9. Some shapes are as follows; you may have found and identified others.

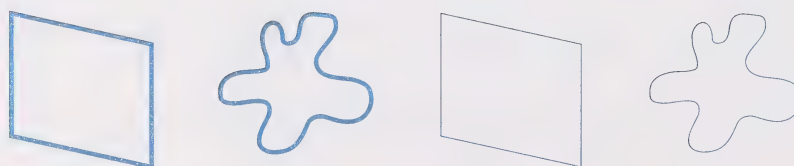


You may wish to examine other cartoon characters or comic strips to see how this artform relies on combining simple shapes.

10. a. Your drawings should look like the following ones.



11. You may have created various shapes using heavy lines and various shapes using faint lines. One example follows.

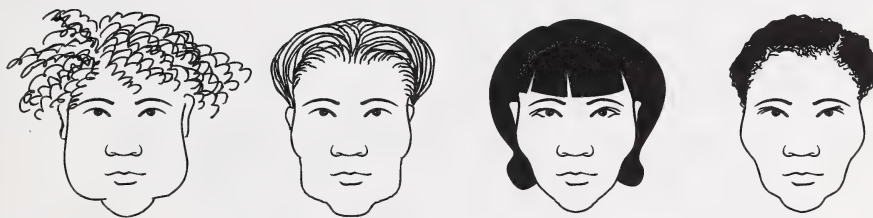


12. You should have created a collage of different coloured shapes and designs. Did you use overlapping to create the feeling of depth in the collage? Did you discover you prefer making or using one particular shape, such as a circle or a rectangle? Do some of your shapes extend beyond the edges of the paper?

One collage is shown here.



13. a. Heavier, angular lines may make the face appear more rugged and solid. Light, curved lines add delicacy or fragility.
- b. The details you have added to the main features of the face should create different looking people. Did you add accessories such as glasses, moustaches, jewellery, or makeup? Compare your results to these examples.



14. The shapes represent the following:

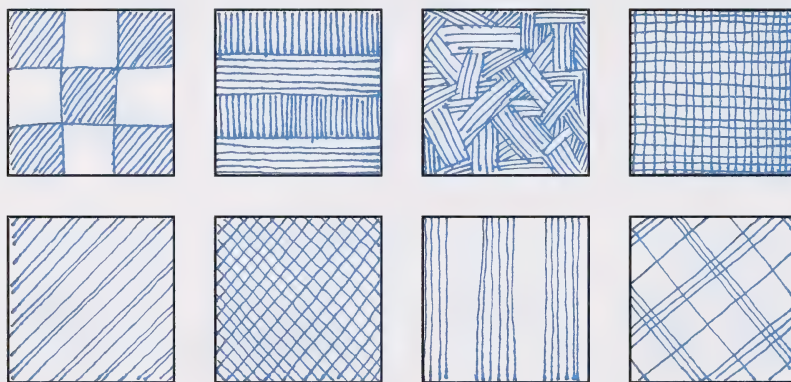
- | | |
|---------------------|-------------------|
| a. flammable | e. hand wash |
| b. recycle | f. seeing-eye dog |
| c. hearing impaired | g. blood donor |
| d. ambulance | h. poison |

15. The picture in b. uses space more effectively. The picture in a. has many details that make the design appear congested. The design in b. has a background that helps place Earth as the focal point; the circles in the background repeat the shape of Earth, thereby creating unity.

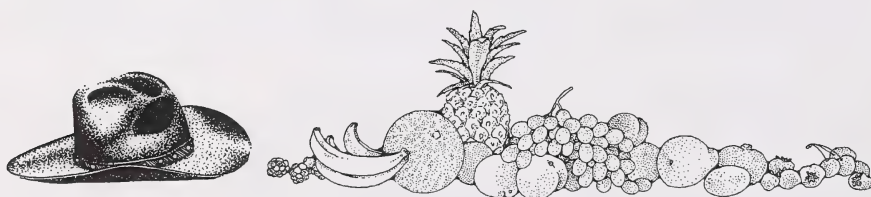
16. You will discover that you have two shapes—a negative shape and a positive shape. The star is called the positive area; the background part with the cut-out star shape is called the negative area.
17. Shape is the element of design that is two-dimensional and encloses space. It shows only height and width. Form is an object that has height, width, and depth; it is three-dimensional.
18. a. You have created a three-dimensional form from a two-dimensional shape. Many three-dimensional projects are first designed in two dimensions.
b. A contour of a design is the image showing only the edges. In a two-dimensional design, only height and width are shown.



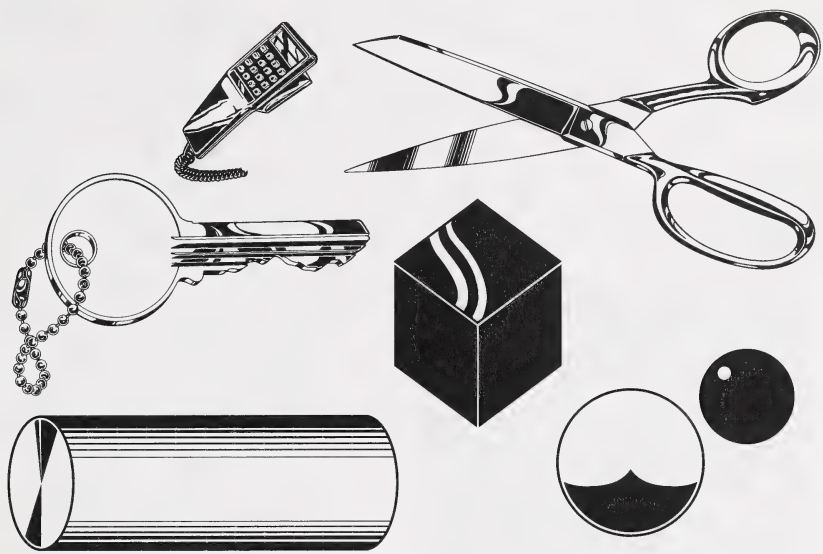
19. Answers will vary. The square is shown here as an example. Your copied or created shapes may have some of the following textures made by hatching and crosshatching.



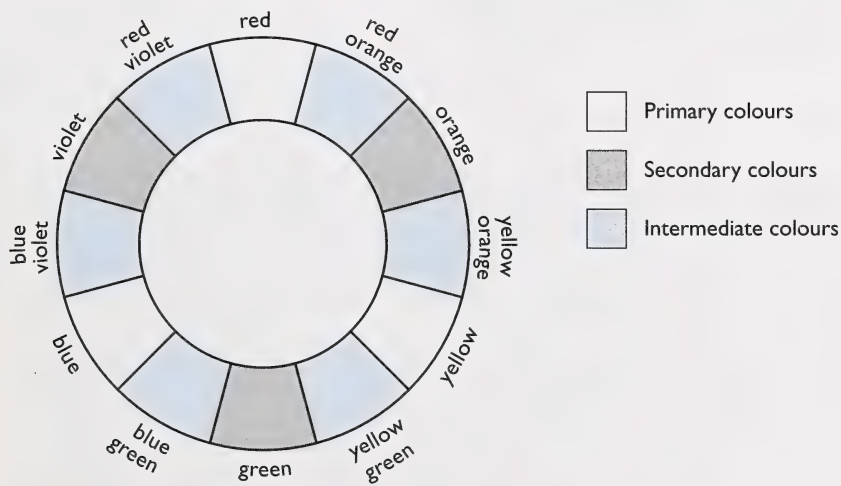
20. Answers will vary. Texture created with dots may appear as follows:



21. Objects with the look of a smooth, shiny surface or transparency may appear as follows:



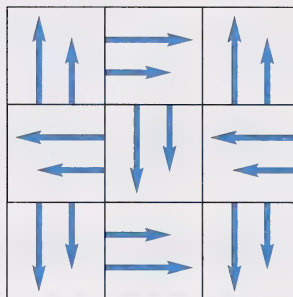
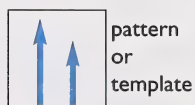
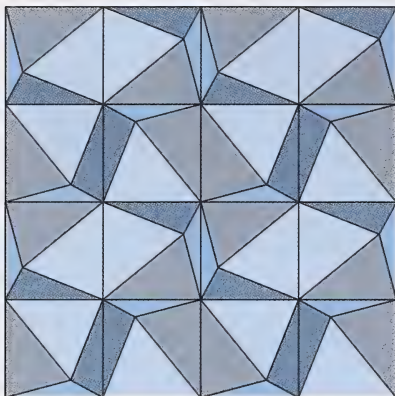
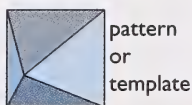
22. Your diagram should look like the following one.



23. The colour scheme or combination indicated by the diagrams are as follows:

- a. analogous—the use of colours close to each other on the colour wheel
- b. monochromatic—the use of variations of one colour
- c. triads—the use of three colours equally spaced on the colour wheel
- d. complementary—the use of colours opposite each other in the colour wheel

24. a. The red (warm colour) will make the shape appear to come forward; the blue (cool colour) will make the shape appear to recede.
- b. The red shape appears shorter or smaller; the blue shape looks longer or a little larger.
25. Answers will vary. A tessellating pattern can be similar to the following. In each case, a square is repeated and re-arranged to create a larger pattern. Two examples follow.



26. Answers will vary. An example follows. The photo on the left illustrates random patterns. The photo on the right illustrates a planned, uniform pattern.

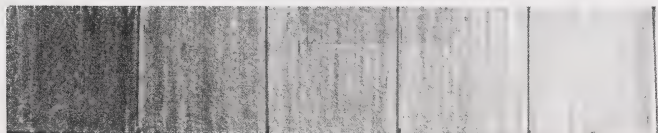


Section 2: Activity 2

1. Following are the types of balance indicated by the diagrams:
 - a. asymmetrical
 - b. symmetrical
 - c. symmetrical
 - d. radial
 - e. asymmetrical
 - f. radial
2. If you were able to access the Internet, you probably came across some of the following fonts:
 - Futura
 - Helvetica
 - Times New Roman
 - Script
 - Arial
 - Bookman Old Style
 - Tahoma
 - Verdana

You may have found many more font styles. Which style did you find easy to read? difficult to read?

3. Was it difficult to achieve balance and unity when the picture you found to be most interesting had to be the centre of interest? Which type of balance did you use? Do you feel this was the most effective choice?
4. Colours used in a drawing should draw your attention to the design on your page. You must be careful that the complementary colours do not overpower the design. A design with complementary colours could show a lot of contrast. Ideas for using complementary colours could include the following combinations:
 - a green tree with red apples
 - a yellow basket of purple flowers
 - orange trim on a blue jacket
5.
 - a. An object with one tone all over and having no contrast is best illustrated by Diagram B.
 - b. An object showing contrast through the use of two contrasting tones is best illustrated by Diagram C.
 - c. An object showing a more natural look using a contrast of light, dark, and medium tones is best illustrated by Diagram A.
6. This type of pencil shading is effective for showing changes on curved surfaces. An HB (medium hardness) pencil may produce the best tones.



7. Emphasis is a principle of design used by designers to place importance, prominence, or attention on certain areas or objects. The designer can use opposing sizes and shapes, contrasting colours, or other means to achieve emphasis.

Hopefully, you were successful in finding advertisements where designers emphasized their products by making them larger and more prominent than all other aspects in the advertisement. For example, a toothpaste ad may feature a very big, wide smile showing white teeth. A coffee ad may illustrate a large mug of steaming coffee. Toy ads often show a close-up of a toy with children in the background.

8. Do you have a preference in where you like to position your focal point? If you enjoy creating clouds and skylines, then Example C or Example D may be your favourite. If you prefer developing the foreground, then Example A or Example B may be your favourite. Sometimes students who are left-handed will prefer Example A; right-handed students sometimes prefer Example D.
9. Your design can give the sense of movement through vertical, horizontal, and/or diagonal lines. You can also create motion by using gradients of the same colour or by the direction you have your design facing. Thicker lines may give the illusion of slower movement than thinner lines.

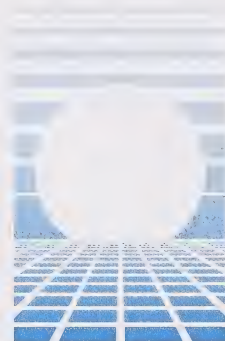
Some examples of designs indicating movement are as follows.



Movement can be created by using diagonal lines. The varying line thicknesses also help create movement.



Movement can be created by having the object pointing or leading the eye.



Movement can be created by using gradients of colour. This design also uses varying line thicknesses to move the eye through space.

10. Rhythm can be created by repeating shapes in a pattern, as shown in the following.



You may have created a design showing rhythm using other shapes or combinations of shapes.

11. When you examined your collected business cards, you may have found the following:

- The business cards have incorporated many of the elements of design (line, shape, space, form, texture, colour, and pattern).
- The business cards have utilized principles of design (balance, unity, contrast, emphasis, proportion, movement, and rhythm) to achieve visually pleasing and creative cards.
- The message is aesthetically presented on the card and is laid out in an eye-catching way.
- The information is complete and includes the name of the businessperson and/or the name of the business, the business logo, and the address and telephone number of the business.
- Many business cards today also include an Internet address for the business and an e-mail address for the businessperson.

Section 2: Follow-up Activities

Extra Help

1. Were you able to use all the elements of design in completing your drawing? Look at the following example.



- Lines are used to define the house, house features, driveway, and trees.
- Shapes are shown in the house, background trees, and driveway.
- There are positive and negative spaces shown in the windows and shutters.
- Texture is shown in the driveway, roof, shutters, and tree.
- Form is suggested in the tree.
- Pattern is illustrated in the roof and garage door.
- Colour is used in the sky, doors, and shutters.

2. The chart could contain the following information. (Remember the information on lines was done for you.)

Element of Design	Element of Design Characteristics
line	<p>Vertical lines suggest stability, dignity, and height.</p> <p>Horizontal lines suggest calmness, repose, and quietness.</p> <p>Diagonal lines suggest movement, action, tension, and drama.</p> <p>Zigzag and spiral lines show excitement.</p> <p>Lines can show movement.</p> <p>Lines can branch or spiral.</p> <p>Lines can create illusions.</p> <p>Lines can form concentric and parallel lines.</p> <p>Lines can create texture.</p>
shape	<p>Shapes can be organic or free-flowing.</p> <p>Shapes can be geometric.</p> <p>Overlapping shapes can create depth.</p> <p>Heavy lines will make a shape appear solid.</p> <p>Thin lines will make a shape appear fragile.</p>
space	<p>Space can be looked at as either positive or negative.</p> <p>Positive space suggests the recognizable object.</p> <p>Negative space surrounds the positive space.</p>
form	<p>Form is three-dimensional—with height, width, and depth.</p>
texture	<p>Texture can be achieved with hatching and crosshatching lines.</p> <p>Texture can be achieved by using areas of dots.</p> <p>Surface areas shaded from light have more texture.</p> <p>Surfaces that face the light have very little texture.</p> <p>Highlights and reflections can give the look of a smooth texture by using diagonal lines on vertical surfaces and vertical lines on horizontal surfaces.</p>
colour	<p>Primary colours are red, blue, and yellow.</p> <p>Secondary colours are orange, green, and violet.</p> <p>Intermediate colours are a mix of primary and secondary colours.</p> <p>Monochromatic harmonies use shades and tints of one colour.</p> <p>Analogous colours are colours close to each other on the colour wheel.</p> <p>Complementary colours are colours opposite each other on the colour wheel.</p> <p>Triads are three colours equally spaced on the colour wheel.</p> <p>Colour can be warm (red, orange, yellow colours) or cool (blue, green, violet colours).</p>
pattern	<p>Pattern can create rhythm and unity through repetition.</p> <p>Pattern can be random, like spots on a giraffe; uniform or planned, such as a brick wall; or radial, like spokes on a wheel.</p> <p>Tessellations are geometric or organic interlocking shapes that create a pattern.</p>

3.
 - a. This is an example of asymmetrical balance.
 - b. This is an example of symmetrical balance.
 - c. This is an example of radial balance.
 - d. This is an example of symmetrical balance.
4. Each design could represent many of the principles of design; however, one design has been selected for each principle:
 - a. Unity can be expressed by Example 6. The vase of flowers results in a feeling of wholeness, harmony, and consistency. Unity can also be expressed by Example 5. The shape of the bird becomes a part of the circle and background lines. Each element of the design becomes part of the whole design.
 - b. Contrast can be represented by Example 2. This design uses contrast of shapes, space, and colour.
 - c. Emphasis can be represented by Example 3. The kite is emphasized against the background and stands out from the clouds.
 - d. Proportion can be represented by Example 5. The lines, circle, and bird shape are arranged to aesthetically offset the whole. The lines would be a routine design without the bird, and the bird would be just a shape without the lines. The proportion of the lines to the birds's shape is the arrangement that aesthetically offsets the whole. Proportion can also be represented by Example 6. Notice that the vase is circular and that the background is a circle. Each element of the design—that is, each flower—has been arranged to aesthetically offset the whole.
 - e. Movement is represented by Example 4. The flapping coat, the flowing mane of the horse, and the directional lines suggest movement in this diagram.
 - f. Rhythm is represented by Example 7. The adults walking with children between them indicates movement and suggests a rhythm. The up-and-down line suggested by the sizes of the people also suggests a rhythm.
 - g. Balance can be expressed by Example 1. The arrangement of flowers illustrates symmetrical balance (the tall, central flower bordered by shorter flowers). The petals of each flower illustrate radial balance—the petals radiate from a central point.

5. The elements of design include line, shape, space, form, texture, colour, and pattern.

The principles of design include balance, unity, contrast, emphasis, proportion, movement, and rhythm.

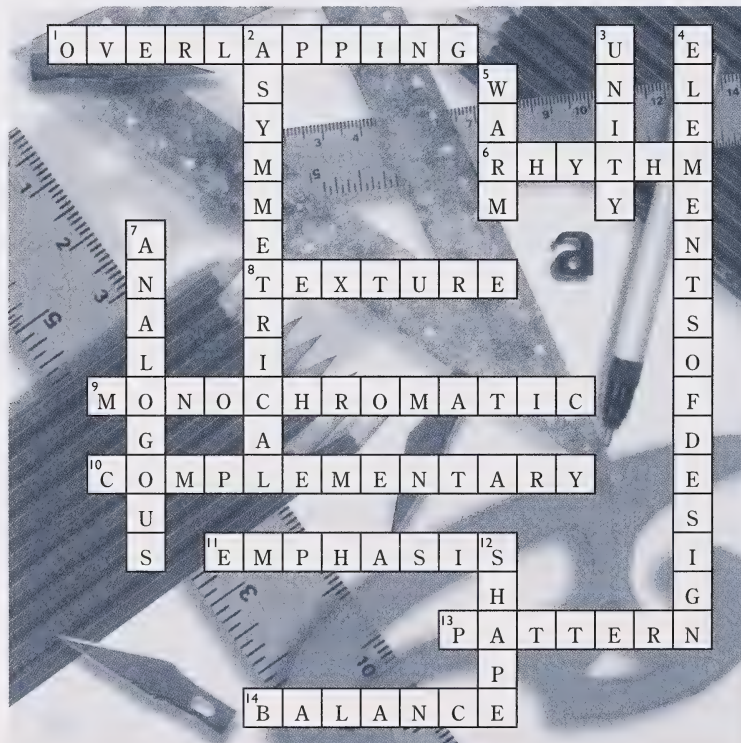
The left-over letters should create the following message:

The elements are the what or the components of the design. The principles of design are the how or placement of these components.

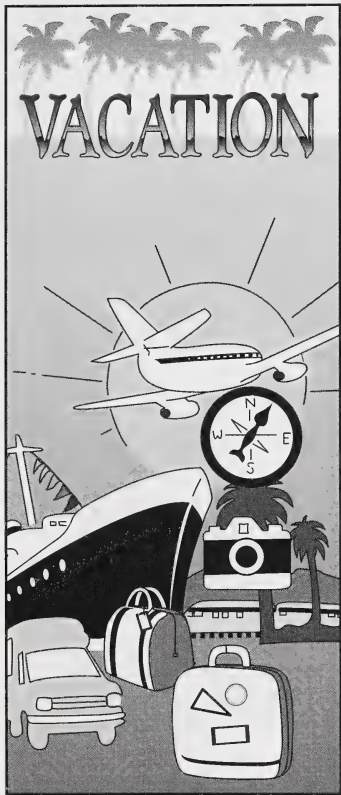
THE ELEMENTS ARE THE WHAT OR THE COMPONENTS OF THE DESIGN. THE PRINCIPLES OF DESIGN ARE THE HOW OR PLACEMENT OF THESE COMPONENTS.

Enrichment

1. The answers to the crossword puzzle are as follows.



2. a. The front page of the brochure may look like the following one. You may have created other designs as well. Be sure your front page emphasizes the different forms of transportation.
- b. Your poster may look like the following one. You may have other designs you created. Be sure your poster focuses on healthy food.



3. Use terms like *colour*, *colour in design*, *colour harmonies*, and *colour contrasts* to make your searches. You may also wish to view various design portfolios to see colour used in design. You could also visit sites of various design firms, museums, or art galleries.

If you have access to a colour printer, you may wish to print various pages that provide inspiring ideas (be aware of copyright concerns). You can add these pages to your design journal. Alternatively, you could keep a list of applicable sites to add to your design journal.

For library research, use terms like *design process*, *drawing*, and *colour* in an encyclopedia or in a subject search.

4. You may find your phone book has listings of designers and graphic artists. Hopefully, your visit was a success. You may wish to include the write-up of your visit in your design journal.
5. Hopefully, you were successful in using the Internet to view some of Escher's tessellations and/or tessellations by other artists and that you found them interesting.

Your local library may have books containing tessellations. Books in art and design or mathematics are good places to begin your research.

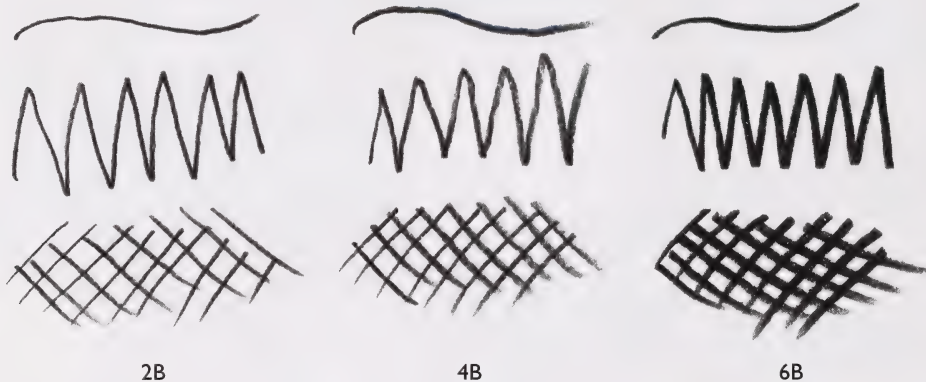
Section 3: Activity 1

1. Your list of materials could include many of the following:

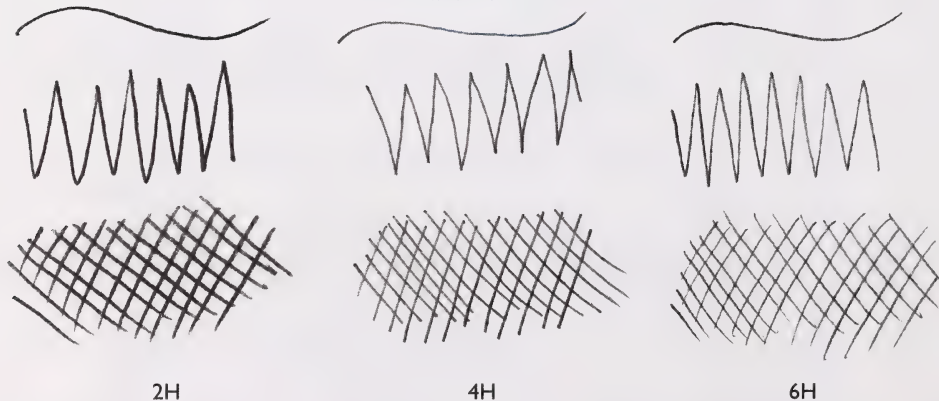
- | | | | |
|---------------|--------------------|----------|------------|
| • wax crayons | • coloured pencils | • fabric | • dyes |
| • pencils | • erasers | • clay | • yarn |
| • paints | • felt pens | • wire | • glue |
| • ink | • chalk | • wood | • plastic |
| • pastels | • paper | • tape | • tin foil |

2. a. A soft-lead pencil would create the best results for this sketch. Since soft pencils do not require much applied pressure when making a line, they are good for making quick design sketches.
- b. A hard-lead pencil would create the best results for this sketch. Hard pencils can produce sharp, fine lines and are ideal to use for accurate drawings, particularly where precise measurements and fine details are needed.
3. Answers will vary. The type of pencil you prefer may depend on the type of lines you had to create for your design. The following effects can be created with various pencils.

Soft Pencils



Hard Pencils



4. a. A felt pen tends to dry up quickly.
 - b. A technical pen produces bold, clean lines.
 - c. A studio marker can quickly add colour and interest to developed drawings.
 - d. A fine-line marker produces thin, bold lines and can be used to make quick sketches.
5. Were you able to create all the colours of a rainbow? Did the primary colours mix well to produce secondary colours? Have you produced intermediate colours (colours that result when primary and secondary colours are mixed) when you mixed a red, blue, or yellow with the secondary colours of orange, violet, and green?
6. a. Your thumbnail sketches of an apple may take on a variety of forms. Do you prefer working with felt pens, coloured pencils, or a combination of both?

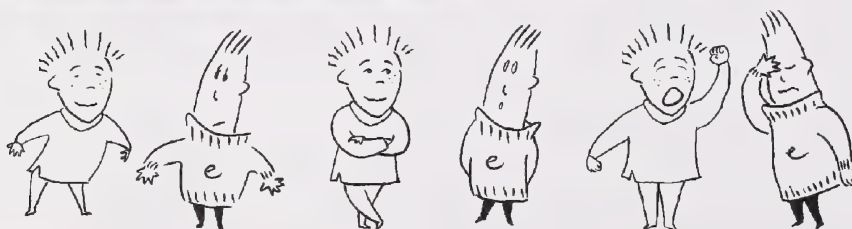
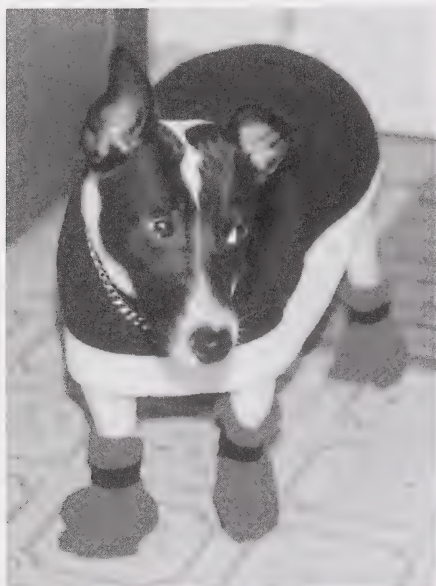


- b. You may have preferred one effect for its appearance or its ease to accomplish the effect. You may have found the boldness of colour produced by a felt pen more appealing than the subtlety of blends from coloured pencils. If your felt pens had drying nibs, you may have found them frustrating to use as well as having unsatisfactory results. If the felt pens were new, you may have had areas of very dark colour where they weren't wanted. Some coloured pencils have brittle leads. Frequent breaking can be frustrating, making the pencils difficult to use. You may have listed other reasons.
7. The more you practise using your paints, the better your results become. The only way to achieve the best results from your paints is to experiment with them.

Did you know painting with water-based paints is the traditional method of colouring design drawings? Avoid mixing these paints with a lot of water. This will cause the paper to pucker and ripple. Dampening your paper with a large brush or sponge before you paint may prevent this problem. Some suggestions for using water-based paints follow:

- Draw your design lightly with pencil.
- Load your brush with plenty of paint to complete a paint stroke.
- Use broad, horizontal strokes for backgrounds.
- Apply the first coat of paint to the design.
- Allow all coats of paint to dry before adding the next coat. (Some interesting effects can be created by **not** following this suggestion.)
- Paint the second coat on the design, except on areas you would like the effect of the object facing a light source.
- Paint the third coat on the design on areas you would have facing away from a light source.

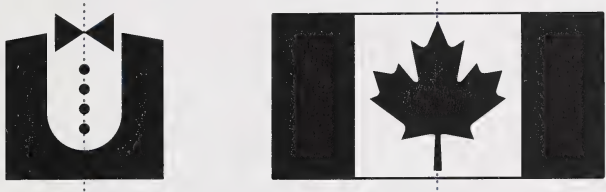
8. Do you have a preference for the type of paper you would like to use for your designs? Designs needing a textured look may use textured paper. Water colours are best produced on paper made for this purpose. Using coloured paper is the best way to create designs that are mainly one colour. The colour of the paper should be the medium tone of the colour with which you want to work. Highlights can be added with lighter tones of the same colour as the paper or with a white coloured pencil or white paint. The shaded areas should be a darker tone of the coloured paper. Sometimes a black coloured pencil can create a darker area.
9. There are many drawing and graphic applications and programs. There are many graphics and photo collections available on disk, CD-Rom, and through the Internet. Images can be scanned or drawn from scratch. Graphics and photos can be resized, colourized, stretched, embossed, and have a myriad of other techniques applied to them. Look at the following examples. How has the computer been used to make changes?



Note: Remember to read and abide by the copyright notices issued by artists. The use of photos may be restricted.

Section 3: Activity 2

1. Your drawings on the right side should be identical to the left side if the design is symmetrical. Guide lines will help you keep the two sides identical in width and height.



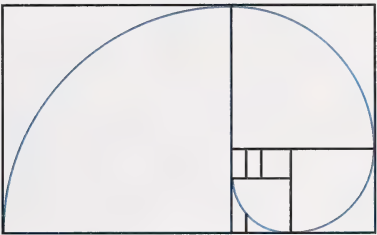
To make your drawings asymmetrical, one side should differ from the other side in some way.



Did you conclude that the asymmetrical drawings appear more active, exciting, and vigorous?

2. Did your drawing look similar to the one to the right?

Measure the proportions in your drawing. Were they close to 3:5 or 8:5?

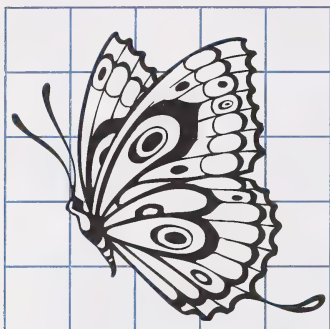


3. Guide lines should be kept light. These lines will help you keep your drawings and/or letters following a straight or curved line. They should help you keep your letters in proportion to your design. Some text samples follow:

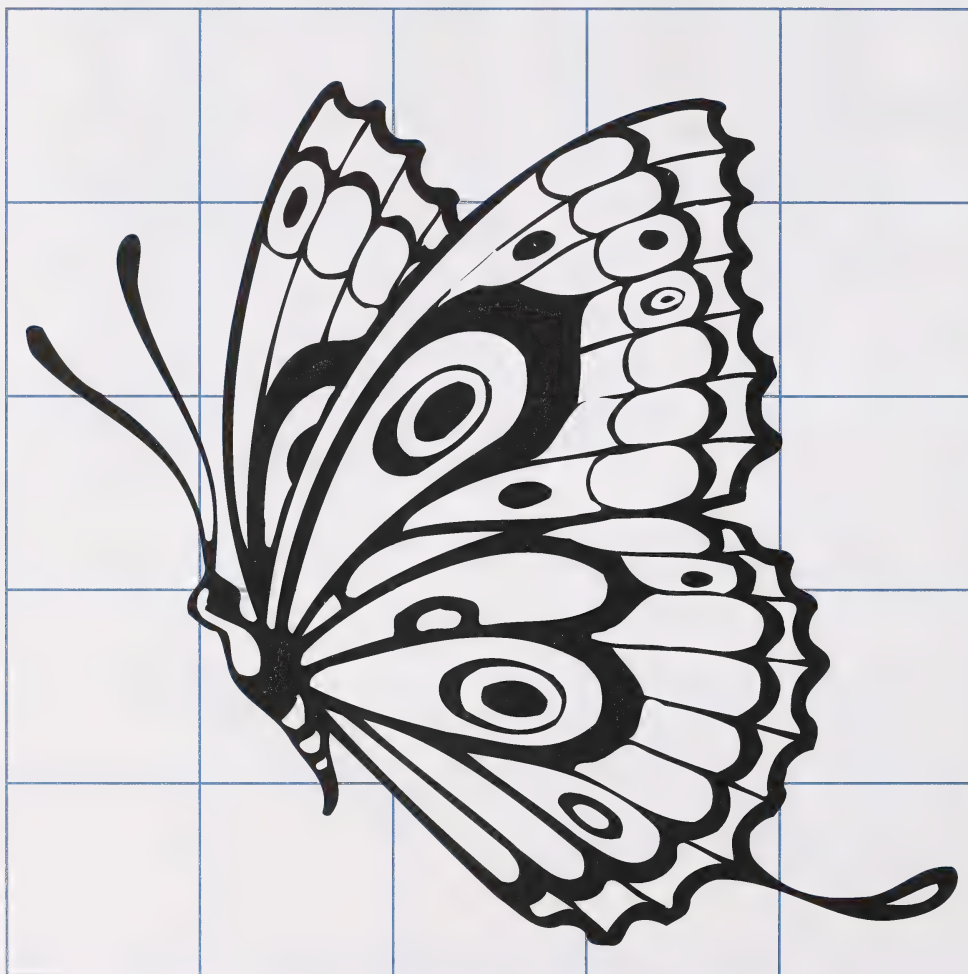


4. Remember, when enlarging a drawing, you use a larger grid scale than the grid on the original design. For reducing a drawing, use a smaller grid than the original one. Your reduction and enlargement of the butterfly should look like the following.

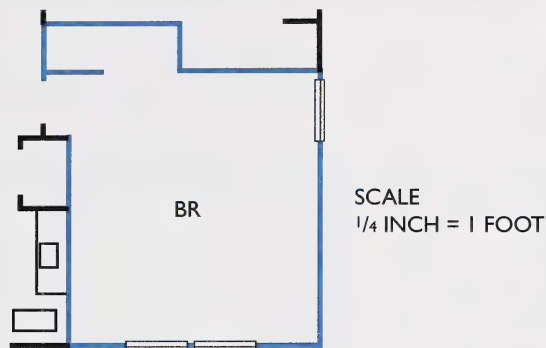
a.



b.



5. You will need to use five and one-half squares to represent the dimension.
6. Did you indicate the scale you used to draw the plan of your bedroom? You could use $\frac{1}{4}$ inch = 1 foot or $\frac{1}{2}$ inch = 1 foot. Did you draw your plan on graphing (grid) paper? Did you indicate the location of the windows, doors, and closets? Your drawing may look like the following one.



7. Did you find the effects of light and shadow interesting and informative? Did the shadows exhibit the concepts of science? Did the shape of a shadow depend on the shape of the solid object?
8. Your initials may appear as follows. Remember to consider the direction of the light source and cast your shadow accordingly.

ALC

Section 3: Activity 3

1. Questions you may want to ask the band members could include the following:
 - Do you have favourite colours?
 - Do you prefer organic or geometric shapes?
 - Do you want a photo on the CD jacket insert?
 - How do you want the band's name displayed?
 - Do you want the CD insert to have socks on it?
 - Which letter font would you like to see on the CD?
 - Are there objects, designs, or colours you do not want to see on the CD?
 - What are some of your favourite recreation activities?
 - What are some of your favourite places?
 - Do the songs on the CD have a certain theme?

2. The need statement may read as follows:

The band needs a two-dimensional CD jacket insert that is attractive to a teenage audience. It should have bright colours, some drawings (hand-drawn and/or computer-generated) and/or some photographs.

3. Do you have at least five possible solutions for the need you have stated in question 2? Remember that for each possible solution you brainstorm, you should consider the need to be fulfilled. Write down and/or sketch all creative, unusual, and bizarre ideas; you can evaluate them later. You can create new ideas by combining or modifying suggested ideas.

For this need, you may have brainstormed the following ideas:

- a CD insert with a photo of the band members
- a CD insert with many bright colours
- a CD insert with hand-drawn graphics of socks
- a CD insert with computer-generated graphics of socks
- a CD insert with a collage of multi-coloured socks
- a CD insert with caricatures of band members

You may have brainstormed many more ideas. Be sure you have at least five ideas.

Remember, brainstorming is a quick way to generate ideas either verbally or on paper. It can be done individually or with a group. It can include sketching, writing, speaking, and listening.

4. Your design brief may be as follows:

To design a CD jacket insert (each page is 12 cm × 12 cm) for the Everybody's Socks band, by using bright colours and photographs and/or drawings (hand and/or computer-generated) that will attract the teenage audience.

After writing your design brief, ask yourself if it explains what you need to do to solve your problem. At a later stage your design brief will help you check whether your final solution meets your need.

5. You may have drafted some of the following questions to ask in the research stage.

- Which materials are most suitable for making the CD jacket insert?
- What kind of tools will be used to make the CD insert?
- How much will it cost to produce the insert?
- How long will it take to design the insert?
- What kind of photos will be used?
- What kind of graphics will be used to produce the insert?
- Can special embossing effects be used?
- Would it be possible to have a holographic design?
- What firms would be able to print the inserts?
- Should glossy or matte paper be used?
- What information should be included on the insert?

You may have many more questions or very different but acceptable questions.

6. a. Did you use a design-factor chart to rate each of your ideas as it relates to the design factors? An example follows.

CD-JACKET-INSERT IDEAS

Design Factors	photo of band members	bright colours	hand-drawn graphics	computer-generated graphics	caricatures of band members	collage of multi-coloured socks
function	5	2	1	3	4	5
safety	5	5	5	5	5	5
aesthetics	5	3	2	4	3	4
materials (matte, non-glare-finish paper)	5	5	5	5	5	5
size and weight	5	5	5	5	5	5
maintenance	5	5	5	5	5	5
ergonomics	5	5	5	5	5	5
Totals	35	30	28	32	32	34

Rating Scale

5 = excellent
4
3
2
1 = poor

You could also make a similar chart using a high-gloss-finish paper as your material.

- b. In this example, the photo of the band members received the highest score. This was followed very closely by the collage of multi-coloured socks.
- c. You may choose the highest-scoring idea or you may not. With either choice, you should explain the reason for your choice. Because two ideas scored very high, you might decide to combine ideas. For example, you may decide to have a photo of the band members wearing multi-coloured socks. If you were to re-evaluate the possible ideas now, the combination idea would result as a very definite winner.

7. For your project, you can acquire information from the following sources:

- professionals—artists, graphic designers, radio hosts, record producers
- libraries
- music stores
- bookstores (magazines, newspapers, special trade publications, videotapes, audiotapes, computer software)
- local industries and businesses
- colleges
- universities
- the Internet
- surveys of the target audience

For this example, you can gather more information when doing your research for it from a graphic designer. You could also check stores that sell CDs or you could search the Internet (use search terms such as *CD inserts* or *design ideas*). You can also look for graphics to match the band member's interests.

8. a. A model is a built-to-scale representation of an object. It is usually **not** the actual size of the object. It is made to help work out any problems that may occur while making the final object.

A mockup is a full-sized model built to scale (1:1). It is a model that is the actual size of the object.

- b. Answers will vary. You answer should be expressed in paragraph form. For the need you have identified, you should consider the following before coming up with a solution:

- Go through the brainstorming ideas.
- Consider the design factors.
- Have answers to your research questions.
- Consider the materials, procedures, time available, and tools needed.

Remember that selecting a solution is part of the problem-solving design process.

After considering the preceding, you may have concluded that the photo of the band members wearing multi-coloured socks will solve your problem and fulfil your need for the sample project.

- c. Have you explained why you did or why you did not make a model or mockup of your solution? You may have had to do more research. Perhaps the time available or the lack of tools, money, and/or materials may be problems.
9. Hopefully, you were successful in making the object that would fulfil your need, using the required materials, tools, and procedures. You may wish to include your project or a photo of your project in your portfolio. Include any notes you made during the preliminary steps in the design of your project.

If you were working on the sample project, you would make a prototype of the CD jacket insert for the band Everybody's Socks.

10. a. Answers will vary. To evaluate the CD jacket insert, for example, you may use some of the following questions. You may ask similar questions for the evaluation of your object.

- Does the item satisfy the identified need?
- Does the design brief explain what was to be fabricated?
- Was the research current, accurate, and appropriate?
- Was the procedure suitable for making the item?
- Were the design factors (function, safety, aesthetics, materials, size and weight, maintenance, ergonomics) considered when rating the ideas?
- Did the item solve the problem?
- Did the materials and tools lend themselves well to creating the item?
- Is the design of the item different from or similar to others used for the same purpose?
- How does the item work under conditions in which it will eventually be used?
- Can any possible improvements be identified?

You could have the band evaluate the jacket insert. Also, you could survey some people, particularly teenagers, to find out what they like and dislike about the insert. If changes have to be made, now is the time to do it, before the design is approved for mass production.

b. Did you include charts, graphs, lists, notes, sketches, and comments in the write-up of your evaluation? Will your item satisfactorily fulfil the need you identified? Do you have to make modifications to your project? Do you feel your design was successful?

Section 3: Follow-up Activities

Extra Help

1. Answers will vary. The tools and media you may use for design studies could include the following:

- pencils—Soft-leaded pencils make dark lines and are good for making quick designs; hard-leaded pencils make sharp, even lines and are good for making accurate drawings.
- technical pens—Technical pens produce bold, clean lines with a constant thickness; they can be used to make drawings that need to be accurate and precise.
- fine-line markers—Fine-line markers make thin, bold lines and can be used for precise drawings, sectional views, and for applied textures.
- felt pens—Felt pens provide quick colour to designs.
- studio markers—Studio markers can add colour, as well as many shades, quickly to designs.
- coloured pencils—Coloured pencils can be used to blend colours and provide texture.
- paints—Paints provide another medium for adding colour to designs. They are good for colour washes and providing colour highlights.

2. When using felt pens, studio markers, or paints, the very last colours to be used should be the dark colours. It is almost impossible to use a light colour over a dark colour without some of the dark colour showing through the lighter colour.



3. You could use technical pens to outline your drawing, a thin-line felt pen for the frame, and studio markers or coloured pencils as your colour filler.
4. a. This arrangement is in the shape of an obtuse triangle.
b. This arrangement is in the shape of an isosceles triangle.
c. This arrangement is in the shape of an equilateral triangle.
d. This arrangement is in the shape of an isosceles triangle.
5. The design process allows the following:
- It helps designers (you) to design and make objects in an organized way.
 - It allows designers (you) to find the best solution to a problem in the shortest time.
6. A design process starts with a need—a problem that needs a solution.
7. The design process is a problem-solving method.
8. a. The considerations and/or constraints in this design brief are as follows:
- The bedroom dimensions are 3.40 m × 3.90 m, with an attached closet 1.40 m × 0.70 m.
 - The design must make the most of the space available in the plan provided.
 - A colour scheme must be provided, including consideration of tints, shades, and fabric patterns.
 - Soft furnishing examples must be given, including samples of fabrics.
 - The furniture should have balance between looks and practicality (function).
- b. You may have suggested any two of the following research strategies:
- Visit some local furniture stores.
 - Make sketches and collect pictures of examples of bedroom furniture.
 - Use the Internet to locate sites that relate to interior design, furniture manufacturers, fabric suppliers, and decorator companies.
 - Ask yourself a series of questions related to the problem and find the answers to them.

- Examine some of your possible ideas to see how appropriate each one is in relation to each of the design factors. (This can easily be done on the design-factor chart.)
- Acquire information from other sources like the following:
 - professionals (interior designers, carpenters, architects)
 - libraries (decorating magazines, books, videos)
 - local industries and businesses (furniture stores, drapery shops)
 - the Internet
 - catalogues

You may have other research strategies.

c. Colour is important in a project like this for the following reasons:

- Colour adds interest to the design.
- Colour is suggestive. Cool colours like green, blue, or violet suggest peace and quiet. Warm colours like red, orange, and yellow suggest activity and tension. Bright, warm colours seem to come forward or project. Dull, cool colours seem to go away or recede.

You may have mentioned other ideas.

- d. You might include an upholstered chair, cushions, pictures, curtains, or a lamp as soft furnishings.
- e. The designer could work out positions of furniture on the floor plan by creating small-scale models to represent the furniture and move these models on a paper floor plan. Furniture pieces can also be outlined using the same scale as a floor plan. These pieces can then be cut out and moved about on the floor plan.
- f. A lamp next to the bed could be used for reading; it is a convenience. It provides light for the person going from the doorway to the bed when going to sleep; it is a safety feature. Light from a lamp is often a soft, diffused light. Such light creates a restful atmosphere, which is important in a sleeping area.

If you try this project, you may wish to take photographs or a video of your bedroom design model to include in your design portfolio.

- g. A cardboard box is one material you might use to create a model of the bedroom. It is easy to work with and it is readily available. After using it, it is recyclable.

Enrichment

1. Many professional designers use some form of this design process when creating their designs. One advantage of using the design process is that if you become stuck at one stage, you can loop back and re-enter the previous stages and do extra work that will help you proceed to the next stage. Probably one of the most difficult parts of solving a design problem is coming up with possible solutions for the problem. The design process provides a consistent format you can follow when asked to do projects in design studies.

Did you find that many of the tools and techniques used by professional designers are similar to those you have used?

2. All the structures were created using mathematical and/or scientific principles. Examine books about architecture or search the Internet using the term *architecture*. The use of geometric shapes and trigonometric ratios are found in most structures. The golden-rectangle ratio may have been used in some designs.
3. The answers to the word problem are as follows:

[illegible]

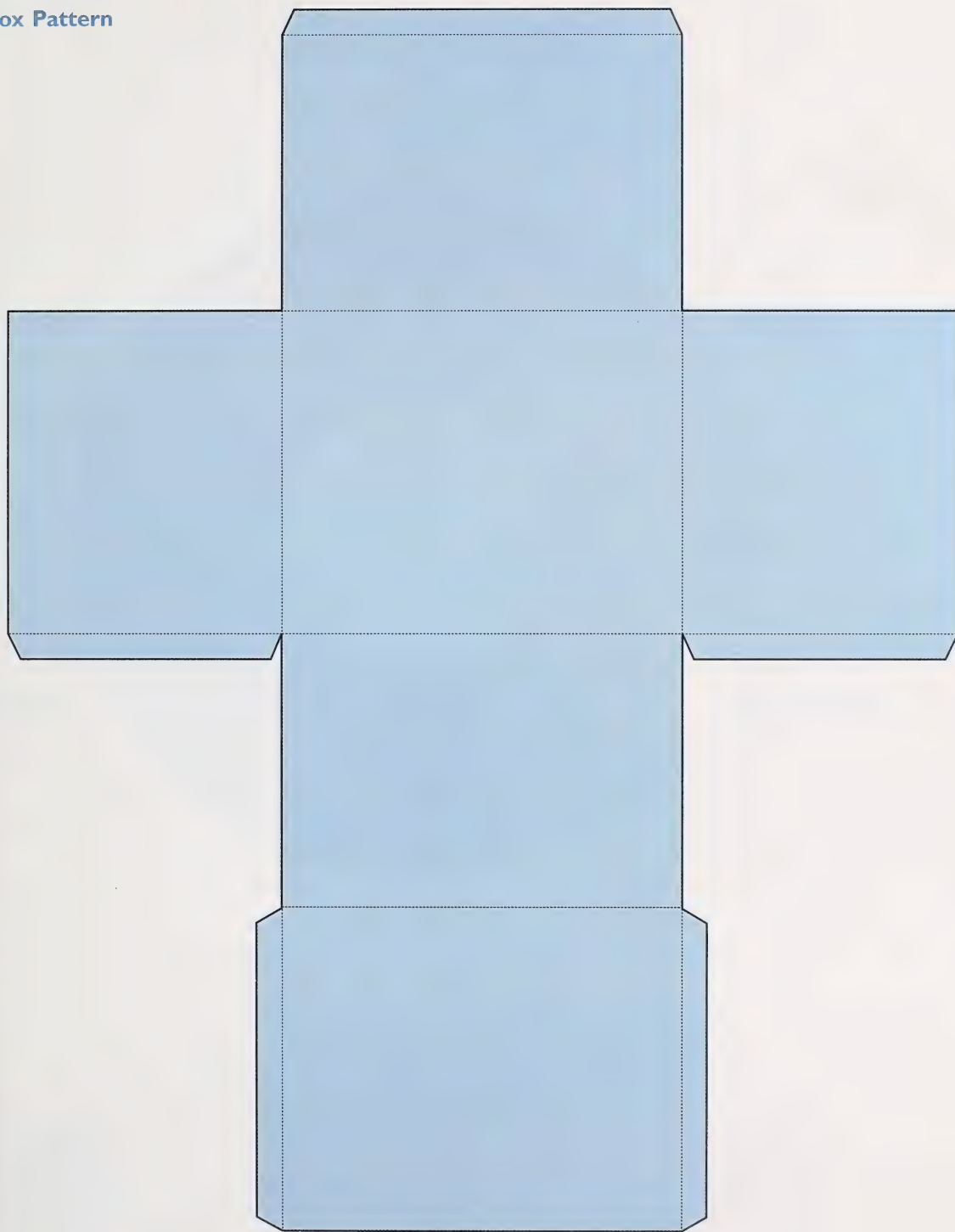
The hidden words are **design studies**.

Image Credits

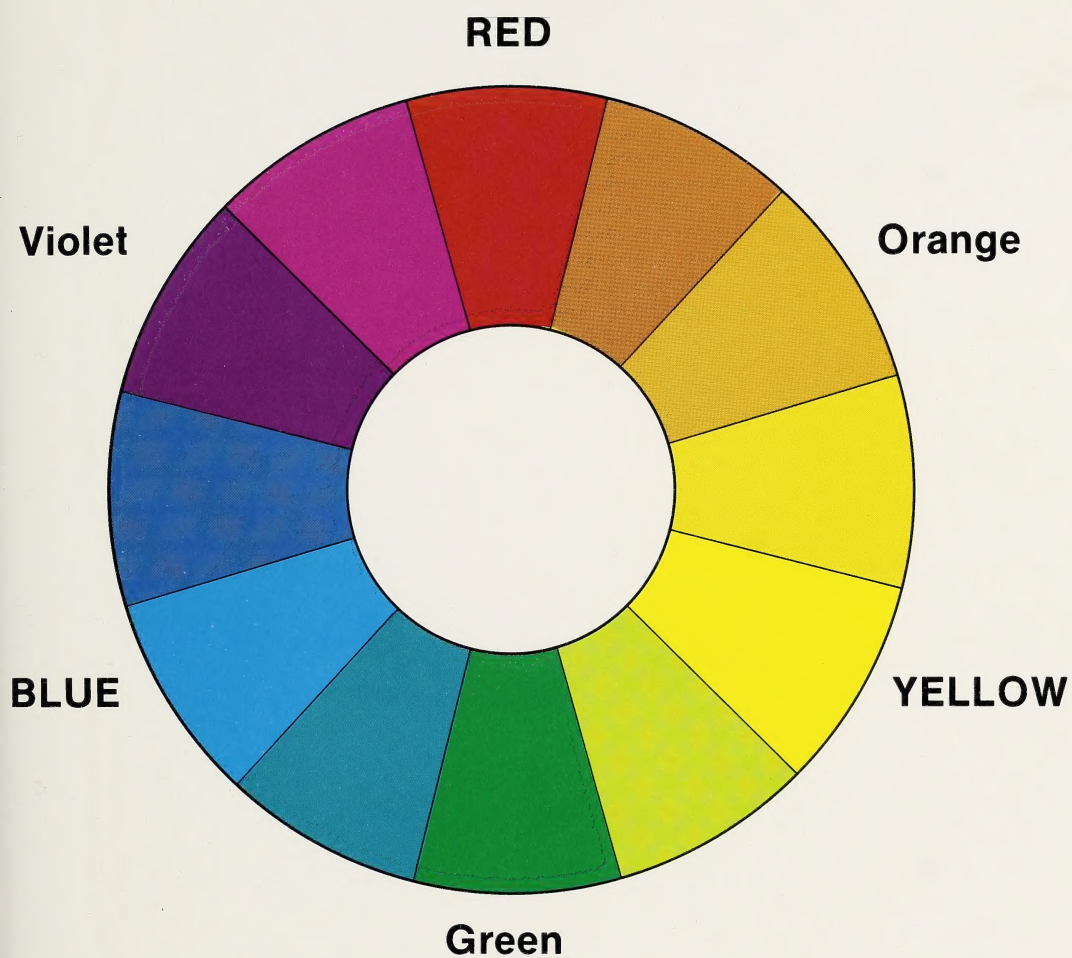
Some clip art drawings are commercially owned.

Page

4	Image Club/Studio Gear/ EyeWire, Inc.	43	collage: Corel Corporation	89	PhotoDisc, Inc.
5	PhotoDisc, Inc.	47	Corel Corporation	96	top: PhotoDisc, Inc.
6	EyeWire, Inc.	48	Image Club/Studio Gear/ EyeWire, Inc.	99	bottom: PhotoDisc, Inc.
7	Image Club/Studio Gear/ EyeWire, Inc.	49	PhotoDisc, Inc.	101	top: PhotoDisc, Inc.
8	PhotoDisc, Inc.	51	PhotoDisc, Inc.	102	EyeWire, Inc.
9	PhotoDisc, Inc.	52	EyeWire, Inc.	103	PhotoDisc, Inc.
10	PhotoDisc, Inc.	54	all: Corel Corporation	105	EyeWire, Inc.
11	PhotoDisc, Inc.	55	all: Corel Corporation	106	EyeWire, Inc.
12	PhotoDisc, Inc.	58	Adobe Systems Incorporated	109	Corel Corporation
13	PhotoDisc, Inc.	59	bottom left: PhotoDisc, Inc.	110	Gazelle Technologies, Inc.
17	PhotoDisc, Inc.		bottom right: © 1999– www.arttoday.com	116	EyeWire, Inc.
20	PhotoDisc, Inc.	60	Corel Corporation	118	PhotoDisc, Inc.
21	PhotoDisc, Inc.	61	bottom left and right: Corel Corporation	120	top and bottom: PhotoDisc, Inc.
22	PhotoDisc, Inc.	62	middle left (item 1.c.): Corel Corporation	121	EyeWire, Inc.
23	PhotoDisc, Inc.		middle right (item 1.d.): PhotoDisc, Inc.	122	PhotoDisc, Inc.
24	PhotoDisc, Inc.		lower right (item 1.f.): Image Club/Studio Gear/EyeWire, Inc.	123	Adobe Systems Incorporated
25	PhotoDisc, Inc.	65	all: Corel Corporation	124	PhotoDisc, Inc.
27	PhotoDisc, Inc.	69	Corel Corporation	125	PhotoDisc, Inc.
31	collage: centre left–Adobe Systems Incorporated; right and top and bottom left–Corel Corporation	71	Image Club/Studio Gear/ EyeWire, Inc.	126	PhotoDisc, Inc.
32	Corel Corporation	77	Corel Corporation	127	PhotoDisc, Inc.
35	PhotoDisc, Inc.	79	Corel Corporation	128	PhotoDisc, Inc.
40	PhotoDisc, Inc.	85	Image Club/EyeWire, Inc.	131	PhotoDisc, Inc.
		87	PhotoDisc, Inc.	132	Image Club/Studio Gear/ EyeWire, Inc.
				133	top and bottom: EyeWire, Inc.
				134	Corel Corporation
				135	collage: Corel Corporation
				138	PhotoDisc, Inc.
				158	Corel Corporation



A COLOUR WHEEL



pure BLUE



a tint of BLUE

pure YELLOW



a tint of YELLOW

pure RED



a tint of RED

